

STUDIES OF SOUTH AMERICAN PLANTS, XI
 NOTEWORTHY SPECIES OF HIPPOCRATEACEAE
 AND VACCINIACEAE

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With four text-figures

THE PRESENT paper is based largely upon material made available to the writer by Mr. E. P. Killip, of the U. S. National Museum, and Dr. José Cuatrecasas, of the Escuela Superior de Agricultura Tropical, Cali, Colombia. I am greatly indebted to these colleagues for forwarding such interesting material for study. The large collections made in western Colombia by Messrs. Killip and Cuatrecasas are of the greatest importance in a study of the flora of that country. As a result of their work on the Pacific coast and slopes, a great number of new species have been discovered and many range-extensions noted. If other families in this region prove as richly represented as the Vacciniaceae, one may suppose that no other part of South America (except possibly the Venezuela-Brazil boundary) offers such fascinating possibilities to future collectors.

Specimens cited in this paper are deposited in the following herbaria: Arnold Arboretum (A), Gray Herbarium (GH), New York Botanical Garden (NY), and U. S. National Herbarium (US).

HIPPOCRATEACEAE

Elachyptera floribunda (Benth.) A. C. Sm. in *Brittonia* 3: 387. fig. 3, a-n. 1940.

Hippocratea floribunda Benth. Bot. Voy. Sulph. 78. 1844.

COLOMBIA: El Chocó: Banks of Quebrada Togoromá, in dense tidal forest, Killip & Cuatrecasas 39138 (A, US); El Valle: Punta Arenas, north shore of Buenaventura Bay, in mangrove swamp, Killip & Cuatrecasas 38635 (A, US).

Except for the type collection, made by Hinds on Gorgona Island, the cited specimens are the only ones recorded from Colombia. No. 38635 bears mature fruits, which permit an amplification of my description (1. c.). The fruits formerly described and figured by me were from Schipp 715, the type collection of *Hippocratea lancifolia* Lundell; these are slightly smaller and proportionately broader than those of no. 38635, but the essential details are identical.

Mature capsules lanceolate-elliptic, 5.5-7 cm. long, 1.6-2.5 cm. broad, obtuse at apex; seeds 2, the embryoniferous portion coriaceous, lanceolate-ovate, 30-40 mm. long, 11-16 mm. broad, 1.5-2 mm. thick, subacute at apex, rounded at base, the basal wing oblong, coriaceous, 6-9 mm. long, 3-4 mm. broad distally, slightly narrower at base, extended distally into a very narrow flange or inconspicuous ridge along the inner margin of the embryoniferous portion.

Anthodon decussatum R. & P. Fl. Per. 1: 45. *pl.* 74, *b.* 1798; A. C. Sm. in *Brittonia* 3: 420. *fig.* 8, *g-k.* 1940.

COLOMBIA: Santander: Vicinity of Barranca Bermeja, Magdalena Valley, between Sogamoso and Colorado Rivers, alt. 100-500 m., *Haught 1455* (A, US) (flowers white, very fragrant).

Both the genus and the species are here reported from Colombia for the first time. Previously *A. decussatum* has been known from Venezuela, Peru, Bolivia, and Brazil, while a second species of the genus is known from Panama. The Haught specimen was collected in 1934 but was not available when my monograph was prepared.

Tontelea chlorantha sp. nov. FIG. 1.

Frutex parvus (demum scandens?) praeter inflorescentiam ubique glaber, ramulis gracilibus cinereis teretibus (juventute leviter angulatis) inconspicue lenticellatis; foliis oppositis, petiolis rugulosis canaliculatis 7-10 mm. longis, laminis chartaceis vel subcoriaceis in sicco fusco-olivaceis elliptico-oblongis, (6-) 8-13 cm. longis, (2-) 3-4.5 cm. latis, basi obtusis, apice in acuminem 8-12 mm. longum obtusum abrupte cuspidatis, utrinque interdum nigro-punctatis, costa utrinque prominente, nervis secundariis utrinsecus 6-8 patulis subrectis marginem versus leviter curvatis anastomosantibusque et rete venularum intricato utrinque prominulis; inflorescentiis axillaribus gracilibus praeter petala glabris vel distaliter obscure puberulis, e basi 3-5-ramosis, ramulis thyrsoideo-paniculatis 3-5 cm. longis pseudodichotome divisis; bracteis papyraceis deltoideo-ovatis subacutis 0.5-1 mm. longis, bracteolis similibus sed minoribus; floribus (post anthesin mox caducis) in ramulis ultimis solitariis sub anthesi circiter 4 mm. diametro, pedicellis gracilibus 1.3-1.5 mm. longis; calyce cupuliformi circiter 1.5 mm. diametro, sepalis ovato-deltaideis, 0.4-0.5 mm. longis, 0.6-0.8 mm. latis, apice obtusis, margine obscure erosulis; petalis sub anthesi patulis submembranaceis oblongo-obovatis, 2-2.3 mm. longis, 1.3-1.5 mm. latis, apice rotundatis, extus et margine et intus apicem versus copiose (sed minute) papilloso-puberulis; disco tenuiter carnosus suberecto, 1-1.2 mm. diametro, 0.3-0.5 mm. alto, apice in lobos parvos 3 inter stamina undulato; staminibus suberectis, filamentis anguste ligulatis circiter 0.7 mm. longis, antheris transverse ellipsoideis circiter 0.2 x 0.35 mm. extrorse dehiscentibus; ovario subimmerso, ovulis in quoque loculo 2 oblique superpositis, stylo cylindrico circiter 0.5 mm. longo, stigmatibus 3 staminibus alternatis conspicue bilobatis, lobis angustis linearibus circiter 0.1 mm. longis patentibus.

COLOMBIA: Vaupés: Yurupari, Río Vaupés, *Cuatrecasas 7312A* (TYPE, Herbario Nacional Colombiano, Bogotá), Oct. 25, 1939 (arbolillo; flor verde pálido).

A member of the species-group *Laxiflorae*, according to my treatment of the genus in *Brittonia* 3: 463-502. 1940, *T. chlorantha* is closely allied only to *T. corymbosa* (Huber) A. C. Sm., of Amazonian Peru. From this, the new species differs in having leaves with the secondary nerves less conspicuous and less strongly curved, the petals copiously papilloso-puberulent without, and the stigmatic lobes more distinctly separate and spreading. In *T. corymbosa* the stigmas, although conspicuously bilobed, have the lobes clearly united in pairs (A. C. Sm. in op. cit. *fig.* 10, *m*); in *T. chlorantha* the six parts of the stigmatic shield are nearly

equally spreading, although close examination reveals that the lobes are paired and alternate with the stamens.

Cheiloclinium meianthum sp. nov.

Frutex scandens ubique glaber, ramulis gracilibus teretibus nodis inconspicue complanato-incrassatis; petiolis rugulosis canaliculatis 10-14 mm. longis, laminis subcoriaceis in sicco viridi-olivaceis subtus pallidioribus, oblongo-ellipticis, 8-11 cm. longis, 3.5-5 cm. latis, basi obtusis et in petio-



FIG. 1. *Tontelea chlorantha*: a. flowering branchlet, $\times \frac{1}{2}$; b. flower, $\times 7$; c. flower with sepals and three petals removed, showing disk, stamens, and stylar column, $\times 7$; d. petal, inner surface, $\times 7$.

lum decurrentibus, apice breviter (ad 5 mm.) et obtuse cuspidatis, margine integris incrassatis et haud recurvatis, costa utrinque prominente, nervis lateralibus utrinsecus 9-11 patentibus marginem versus leviter arcuatis utrinque inconspicue prominulis, rete venularum immerso; inflorescentiis in axillis foliorum solitariis 4-5.5 cm. longis 5-8-plo dichotome divisis, ramulis brevibus teretibus gracilibus, pedunculo 2-2.5 cm. longo, bracteis bracteolisque papyraceis acutis deltoideo-ovatis 0.5-1 mm. longis, ramulis ultimis unifloris, floribus in dichotomiis nullis; pedicellis sub anthesi circiter 1 mm. longis, floribus sub anthesi circiter 2 mm. diametro; sepalis membranaceis semiorbicularibus circiter 0.3×0.5 mm. rotundatis erosulis; petalis submembranaceis oblongis, 1-1.3 mm. longis, 0.8-1 mm. latis, apice rotundatis, integris, obscure glandulosis, linea media paullo incrassatis; disci labiis 3 minutis circiter 0.1 mm. altis et 0.3 mm. latis; staminibus 3. filamentis subteretibus circiter 0.4 mm. longis, antheris

circiter 0.2×0.3 mm. modo generis dehiscentibus; ovario depresso-subgloboso sub anthesi 0.7–0.8 mm. diametro, stigmatibus 3 obscure deltoideis simplicibus circiter 0.1 mm. longis, ovulis 2 in quoque loculo collateralisuperpositis; fructibus juvenilibus ovoideis, pericarpio duro ruguloso.

BRAZIL: Matto Grosso: Salto Belo, Rio Sacre, just below falls, *J. T. Baldwin, Jr.* 3122 (A, TYPE, US), Oct. 23, 1943 (woody vine; fruit about the size of a hen's egg and yellowish [not available with specimen]).

Clearly a member of the species-group *Serrata* as outlined in my recent treatment (in *Brittonia* 3: 528, 1940), *C. meianthum* is most closely related to *C. Jenmani* A. C. Sm., of British Guiana, from which it differs in its smaller leaf-blades, with the apex more shortly cuspidate, the secondary nerves more numerous and less sharply curved, and both secondaries and veinlets much less obvious, and in its slightly more compact inflorescences. The flowers of the two species are essentially identical, but *C. Jenmani* has flowers borne in the ultimate dichotomies, which does not appear to be the case in the new species.

Loesener, in a recent treatment (in *Nat. Pfl.* ed. 2. 20b: 171, 1942), has unaccountably referred *Cheiloclinium* to the Celastraceae, although *Kippistia* Miers is placed in the synonymy of *Salacia* (op. cit. 221) as *Salacia* § *Kippistiae*. The congeneracy of *Cheiloclinium* and *Kippistia* seems beyond question, and the remarkably distinct characters of the group set it far apart from *Salacia* (for discussion see *Brittonia* 3: 526–528, 1940).

VACCINIACEAE

One of the most interesting aspects of the extensive collections made in Pacific Colombia in recent years by Messrs. Killip and Cuatrecasas has been the discovery at low elevations of numerous representatives of the Vacciniaceae. This family, in tropical America, is predominantly montane — to such an extent that only a few years ago representatives from an elevation of less than 1000 m. were rarities. Supposed exceptions were *Anthopteris Wardii* Ball and *Macleania pentaptera* Hoer., which already at the time of my study of the group in 1932 (*Contr. U. S. Nat. Herb.* 28: 311 seq.) had been collected in mangrove swamps around Buenaventura. It now appears that six members of the Vacciniaceae occur in mangrove swamps in this general area, although, to my knowledge, species of the family are nowhere else in America reported from this habitat. Several other species of Pacific Colombia are reported from tidal forest or from essentially sea-level forest.

No fewer than 42 species of Vacciniaceae are now known from Pacific Colombia at elevations of 1000 m. or less. In view of the fact that only a few of these were known and included in my treatment of 1932, that work is entirely inadequate as far as the family in western Colombia is concerned. Therefore it has seemed advisable to list all those species known from the Pacific slopes of Colombia at altitudes of 1000 m. or less. In the following list, the species are those of the present writer unless another authority is indicated; entities described as new in the present treatment are marked by an asterisk.

- Anthopterus bracteatus* (although the original collection bears the inscription "Timbiquí above Popayán," it is likely that the town close to the Pacific coast near sea-level is intended).
- Anthopterus cuneatus* (reported from Nariño at 1000 m. alt.).
- Anthopterus Wardii* Ball (sea-level, sometimes in mangrove swamps, and upward to 1200 m.).
- Calopteryx* insignis** (near sea-level).
- Cavendishia adenophora* Mansf. (from about 700 m. upward to 2000 m. alt. or more).
- Cavendishia chlamydantha** (near sea-level).
- Cavendishia chocoensis* (at low elevations, El Chocó).
- Cavendishia coccinea* (350-450 m. alt., and also reported at 2500 m.).
- Cavendishia compacta* (near sea-level, and also reported at 1800 m.).
- Cavendishia hispida* (at low elevations, El Chocó).
- Cavendishia micrantha** (at low elevations).
- Cavendishia palustris* (sometimes in mangrove swamps).
- Cavendishia praestans** (at low elevations, and sometimes in mangrove swamps).
- Cavendishia Quereime* (H. B. K.) Benth. & Hook. f. (from about 400 m. upward to about 1700 m. alt.).
- Cavendishia splachnoides* (at low elevations, El Chocó).
- Cavendishia striata** (from about 100 m. upward to about 2000 m. alt.).
- Cavendishia tenella** (alt. 200-350 m.).
- Cavendishia urophylla** (sea-level to 100 m. alt.).
- Cavendishia venosa* (near sea-level, and also upward to 1000 m. alt. or more).
- Cavendishia violacea** (near sea-level).
- Killipiella styphelioides* (at low elevations, El Chocó).
- Macleania pentaptera* Hoer. (sea-level, often in mangrove swamps, and upward to 1000 m. alt. or more).
- Macleania tropica** (near sea-level).
- Psammisia aberrans** (alt. 350-450 m.).
- Psammisia caloneura* (Nariño, probably at about 900 m. alt.).
- [*Psammisia chionantha* Sleumer (northwestern Ecuador at low elevations, to be expected in adjacent Colombia).]
- Psammisia coccinea* Sleumer (at low elevations).
- Psammisia macrocalyx** (alt. 350-450 m.).
- Psammisia occidentalis* (at low elevations, sometimes in tidal forest or at edges of mangrove swamps).
- Psammisia pacifica** (near sea-level).
- Psammisia pedunculata** (at low elevations, El Chocó).
- Satyria bracteolosa** (near sea-level).
- Satyria dolichantha** (near sea-level, in tidal forest).
- Satyria grandifolia* Hoer. (near sea-level and upward to 1400 m. or possibly 2100 m. alt.).
- Satyria leptantha** (alt. 900-1180 m.).
- Spherospermum buxifolium* Poepp. & Endl. (in tidal forest and upward to 2000 m. alt. or more).
- Spherospermum ellipticum* Sleumer (near sea-level, and upward to 1000 m. alt. or more).
- Spherospermum majus* Griseb. (at low elevations, sometimes in mangrove swamps, and upward to about 2000 m. alt.).
- Thibaudia Andrei* (Nariño, probably at low elevations).
- Thibaudia Archeri* (at low elevations).
- Thibaudia pachyantha* (Nariño, at about 900 m. alt.).
- Thibaudia pachypoda** (near sea-level).
- Thibaudia paniculata* (Timbiquí, El Cauca; see note under *Anthopterus bracteatus*).
- Spherospermum buxifolium* Poepp. & Endl. Nov. Gen. & Sp. 1: 4. pl. 8. 1835; A. C. Sm. in Brittonia 1: 207. 1933.

COLOMBIA: El Chocó: Banks of Quebrada Togoromá, in dense tidal forest. *Killip*

& *Cuatrecasas 39082* (US) (epiphyte, with drooping branches; corolla white); El Valle: Río Calima (región del Chocó), La Trojita, 5-50 m. alt., *Cuatrecasas 16651* (GH) (frutículo epifito; hoja coriácea, rígida, verde; ramas rojizas; corola blanca; baya lilacina, pálida).

This species has seldom if ever been recorded from lower elevations than 750 m.

Sphyrospermum majus Griseb. Fl. Brit. W. Ind. 143. 1859; A. C. Sm. in Brittonia 1: 209. 1933.

COLOMBIA: El Valle: Buenaventura Bay, in mangrove swamp, *Killip 34963* (NY, US) (epiphytic shrub; corolla white); Estero de Bodegas, south shore of Buenaventura Bay, in mangrove swamp, *Killip & Cuatrecasas 38662* (A, US) (dependent epiphyte with white flowers and fruit); Costa del Pacífico, Río Cajambre: Barco, 5-80 m. alt., *Cuatrecasas 17131* (GH) (frutículo epifito con ramas rígidas, colgantes; cáliz verdoso amarillento pálido; corola blanca).

Although *S. majus* has been obtained from fairly low elevations, I have not previously seen specimens from sea-level or from mangrove swamps.

Sphyrospermum ellipticum Sleumer in Rep. Sp. Nov. 41: 121. 1936.

COLOMBIA: El Valle: Dense forest along highway from Buenaventura to Cali, near sea-level, *Killip & Cuatrecasas 39003* (A, US) (epiphyte with drooping branches; corolla white); Cordillera Occidental, vertiente occidental: Hoya del Río Digua, lado izquierdo: Piedra de Moler, bosques, 900-1180 m. alt., *Cuatrecasas 14920A* (GH).

The cited specimens agree perfectly with Sleumer's original description of *S. ellipticum*, previously known only from northwestern Ecuador at low elevation. The species is more likely to be confused with *S. majus* than with *S. buxifolium*, but it is readily recognized by its minute corollas and comparatively large obtuse leaves. Probably *Archer 1872*, from Quibdó, on Río Atrato, El Chocó, which I cited as dubiously representing *S. majus* (in Brittonia 1: 210. 1933), is also referable to *S. ellipticum*.

Macleania tropica sp. nov.

Frutex epiphyticus, ramulis elongatis teretibus gracilibus glabris castaneis mox decorticantibus; foliis glabris vel disperse et minute pilosis, petiolis gracilibus 2-3 mm. longis, laminis in sicco chartaceis viridiviridibus oblongo-lanceolatis, (3-) 4-6 cm. longis, 1.3-2 cm. latis, basi obtusis vel cuneatis, superne in acuminem peracutum 5-12 mm. longum gradatim attenuatis, margine leviter recurvatis, costa et nervis utrinsecus 2 paullo supra basim orientibus adscendentibus supra subplanis vel leviter insculptis subtus valde elevatis, rete venularum utrinque haud viso; floribus axillaribus solitariis vel binis, pedicellis, calyce et corolla obscure puberulis glabrescentibus, pedicello gracili sub anthesi 7-10 mm. longo basi bracteis 6-8 circumdato, bracteis parvis imbricatis papyraceis oblongo-deltoides, interioribus circiter 1.5 mm. longis; calyce sub anthesi 6-8 mm. longo inconspicue angulato, tubo 2-3 mm. longo et lato, limbo papyraceo erecto anguste cylindrico-vasculari 4-5 mm. longo 5-dentato, dentibus minute apiculatis, sinibus complanatis; corolla tenuiter carnosa cylindrico-urceolata, sub anthesi 23-25 mm. longa, basim versus 3.5-4.5 mm. diametro, superne contracta, intus glabra, lobis 5 deltoides subacutis circiter 2 mm. longis; staminibus 10, 12-14 mm. longis, filamentis in tubo glabrum 6-8 mm. longum connatis, antheris 6-7 mm. longis, tubulo unico quam thecis paullo brevioribus, rima circiter 1.5 mm. longa; stylo filiformi corollam subaequante truncato.

COLOMBIA: El Valle: Costa del Pacífico, Río Cajambre: Barco, 5-80 m. alt., *Cuatrecasas 17103* (GH, TYPE), 21-30 abril, 1944 (arbusto epifito; hoja coriácea, verde oscuro en el haz, claro en el envés; cáliz verdoso rosado; corola roja).

The new species is closely related only to the montane *M. antioquiae* Fedtsch. & Basil., differing in its more gradually attenuate and sharply pointed leaf-blades, its faintly angled rather than obviously winged calyx, its much longer calyx-limb, its longer corolla, which is strictly glabrous within rather than pilose at the throat, and its longer stamens.

Psammisia pedunculata sp. nov.

Frutex gracilis interdum epiphyticus ubique filamentis exceptis glaber, ramulis elongatis gracilibus teretibus cinereis; petiolis rugulosis subteretibus 1-4 mm. longis; laminis chartaceis vel pergamentaceis in sicco fusco-viridibus lanceolato-oblongis, (6-) 9-13 cm. longis, (2-) 2.5-4.5 cm. latis, basi late obtusis, in apicem gracilem 1-2 cm. longum subacutum conspicue caudato-acuminatis, margine integris, 5 (vel 7-) nerviis, costa nervisque principalibus ascendentibus ad 1.5 cm. concurrentibus supra impressis subtus prominentibus, nervis extimis marginalibus brevibus utrinque haud prominulis, rete venularum intricato utrinque prominulo; inflorescentia apicem ramulorum versus axillari suberecta racemosa 5-13-flora pedunculo conspicuo 3.5-9.5 cm. longo incluso 6-12 cm. longa, pedunculo (inferne interdum inconspicue bracteolatis) et rhachi subteretibus gracilibus; pedicellis teretibus sub anthesi 11-18 mm. longis et 0.5-1 mm. diametro (superne incrassatis), bracteis submembranaceis deltoideis acutis circiter 1.5 mm. longis cito caducis subtentis, basim versus inconspicue bibracteolatis, infra articulationem conspicuam minute glanduloso-denticulatis; calycis tubo cupuliformi sub anthesi circiter 2 mm. longo et 3.5 mm. diametro basi rotundato, limbo submembranaceo erecto-patente circiter 1.5 mm. longo, lobis 5 late deltoideis apiculatis, sinibus complanatis; corolla in sicco membranacea (in vivo ut videtur carnosa) subgloboso-urceolata, circiter 5 mm. longa et medium inflatum versus 7 mm. diametro, basi et apice valde contracta, faucibus circiter 2 mm. diametro, lobis 5 suberectis deltoideis obtusis circiter 1×1.5 mm.; staminibus 10 circiter 3.5 mm. longis, filamentis liberis membranaceis ligulatis circiter 2 mm. longis superne obscure hispidulo-ciliolatis apicem thecarum versus antheris connectis, connectivo brevi nigrescente inconspicue et obtuse calcarato, antheris 2.5-3 mm. longis crassis (circiter 1 mm. diametro), thecis 1.7-2.3 mm. longis valde granulosis basi incurvis et obtusis, tubulis anguste conicis 0.6-1 mm. longis basi subconnatis, rimis ovalibus tubulos subaequantibus; stylo crasso tereti corolla subaequali, stigmatate truncato; fructibus obovoideo-globosis rugulosis 7-8 mm. diametro limbo calycis persistente coronatis.

COLOMBIA: El Chocó: La Concepción, 15 km. east of Quibdó, alt. about 75 m., *W. A. Archer 2002* (NY, US no. 1,519,095, TYPE). April 20-May 23, 1931 (slender shrub 1-3 m. high; pedicels Chinese red; corolla pale green). *Archer 2209* (US); Corcovado region, upper Río San Juan, ridge along Yeracú Valley, alt. 200-275 m., in dense forest, *Killip 35304* (NY, US) (on tree; branches of inflorescence and calyx red; leaves lustrous above); dense forest south of Río Condoto, between Quebrada Guarapo and Mandinga, alt. 120-180 m., *Killip 35681* (NY, US) (epiphyte).

The specimens cited above were originally referred to *P. breviflora* (Benth.) Kl., a montane Colombian species which probably does not occur below 1500 m. However, *P. breviflora* is the closest ally of the new

species, which differs in having its inflorescence much longer and with a conspicuous peduncle, its pedicels shorter, its corolla usually shorter and proportionately more inflated at the middle, and its stamens smaller and proportionately stouter.

Psammisia occidentalis A. C. Sm. in Am. Jour. Bot. 27: 452. 1940.

COLOMBIA: El Chocó: Banks of Quebrada Togoromá, in dense tidal forest, *Killip & Cuatrecasas 39110* (A, US); El Valle: Río Calima (región del Chocó), La Trojita, *Cuatrecasas 16278* (GH); Punta Arenas, north shore of Buenaventura Bay, *Killip & Cuatrecasas 38640* (A, US) (non-inundable woods at edge of mangrove swamp); Agua Clara, along highway from Buenaventura to Cali, *Killip & Cuatrecasas 38869* (A, US); Río Cajambre, Barco, *Cuatrecasas 17009* (GH); Río Yurumanguí, Veneral, *Cuatrecasas 15801* (GH); El Cauca: Río Micay, orilla derecha, en Caliche, *Cuatrecasas 14188* (GH).

The cited collections indicate that this species is fairly abundant along the Pacific coast of Colombia and extend its known range slightly southward. All were obtained at elevations of less than 100 meters, some being from sea-level. The cited material includes specimens with excellent flowers, which in size are similar to the larger flowers mentioned in my original description; the type of the species has rather smaller flowers, which are apparently not fully mature. The plant is said to be either an epiphytic or terrestrial shrub; the pedicels and calyces are red, and the corolla is yellow or greenish with green lobes.

Psammisia macrocalyx sp. nov.

Frutex magnus ramulosus 5–6 m. altus corolla filamentisque exceptis glaber, ramis subscandentibus, ramulis crassis obtuse angulatis demum subteretibus; petiolis nigrescentibus rugulosis crassis (2.5–3 mm. diametro) circiter 2 cm. longis; laminis in sicco chartaceo-coriaceis fusco-olivaceis oblongo-ellipticis, 20–25 cm. longis, 8.5–10 cm. latis, basi obtusis et in petiolum decurrentibus, apice in acuminem 8–12 mm. longum obtusum abrupte cuspidatis, margine leviter recurvato-incrassatis, e basi 5-nerviis, costa nervisque (duobus proximis suprabasalibus) supra acute impressis subtus prominentibus, rete venularum copioso supra leviter subtus valde prominulo; inflorescentiis axillaribus breviter racemosis 5–8-floris basi bracteis 4–6 imbricatis minutis circumdatis, rhachi 13–20 mm. longa rugulosa subflexuosa 1.5–2 mm. diametro, floribus bracteis papyraceis deltoideis obtusis 2–3 mm. longis subtentis; pedicellis crassis (1.5–2.5 mm. diametro) teretibus rugulosis 2–3 cm. longis cum calyce conspicue articulatis medium versus 2- vel 3-bracteolatis, bracteolis subcoriaceis deltoideis subacutis 1.5–2 mm. longis; calyce magno coriaceo campanulato 15–18 mm. longo, apice 10–15 mm. diametro, tubo cupuliformi sub anthesi 5–6 mm. longo, limbo erecto-patente quam tubo duplo longiore in lobis 5 subaequalibus profunde fisso, lobis deltoideo-oblongis subacutis 5–6 mm. longis basi 5–7 mm. latis, sinibus acutis; disco annulari-pulvinato crasse carnosio; corolla carnosa cylindrico-suburceolata 30–38 mm. longa, basim versus 7–10 mm. diametro, faucibus paullo angustata, extus distaliter pilis dispersis adpressis glandulosis brunneis 0.2–0.4 mm. longis pilosa, profunde 5-lobata, lobis erectis oblongis subacutis 6–8 mm. longis basi 3–5 mm. latis; staminibus 10, 12–13 mm. longis, filamentis liberis papyraceis ligulatis 5–6 mm. longis 2–2.5 mm. latis margine distali pilis pallidis 0.2–0.5 mm. longis dense ciliolatis, connectivis

crassis subcoriaceis conspicue bicalcaratis, calcaribus erecto-patentibus obtusis, antheris rigidis circiter 10 mm. longis, thecis circiter 1.5 mm. crassis basi in appendicem subacutam circiter 0.7 mm. longam productis, tubulis quam thecis duplo brevioribus inferne lateraliter connatis superne liberis per rimas ovas circiter 2 mm. longas dehiscentibus; stylo crasso tereti corollam subaequante apice leviter incrassato.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Anchicayá, lado derecho, bosques entre Pavas y Miramar, 350-450 m. alt., *Cuatrecasas 14419* (GH, TYPE), 16 abril 1943 (gran frútex de 5-6 metros, muy ramificado; ramas bejuocosas; pedúnculos y cáliz rojo-escarlatas mates; corola carmín, brillante, con el extremo esmeralda, luego rojizo).

Psammisia macrocalyx is a very distinct species, with combinations of characters (e.g., very large flowers and short inflorescences) not found in other described species. Its closest relative is probably *P. chionantha* Sleumer, from northwestern Ecuador, but the new species differs in its longer petioles, slightly larger leaf-blades, much shorter racemes, larger calyx (especially as to the coarse deltoid-oblong lobes), glandular-pilose corolla, and distally ciliate filaments.

Psammisia coccinea Sleumer in Rep. Sp. Nov. 41: 120. 1936.

COLOMBIA: El Chocó: Río San Juan, cercanías de Palestina, 5-50 m. alt., *Cuatrecasas 16929* (GH) (frútex epifito; hoja coriácea, verde claro; cáliz y corola rojo-cárdenos, $\frac{1}{2}$ sup. corola blanco); El Valle: Forest along Río Sabaletas, near km. 29 of highway from Buenaventura to Cali, alt. 25 m., *Killip & Cuatrecasas 38858* (US) (epiphytic shrub with elongate branches; old calyx pinkish red); Río Cajambre, Barco, 5-80 m. alt., *Cuatrecasas 17026* (GH) (arbusto bejucoso; hoja coriácea, rígida, verde amarillento medio; cáliz rosado-cárdeno, ápice más claro; corola rosado-cárdena con dientes blancos).

This species, previously recorded only from the type collection from northwestern Ecuador at 150 m. alt., is almost certainly represented by the above-cited Colombian collections. Minor differences between our specimens and the original description are discernible, such as the often caudate-acuminate leaf-apex (1-3 cm. long), the often longer pedicels (7-15 mm. long in flower, up to 40 mm. long in young fruit), the slightly larger calyx (5-8 mm. long), the sometimes shorter corolla (25-28 mm. long at anthesis), and the distally puberulent rather than strictly glabrous filaments. These points appear to be minor variations; in general the species is well characterized by its large 5-nerved leaf-blades, its membranaceous campanulate minutely toothed calyx-limb, its corolla being remarkably thin and papery in texture when dried, and its short stout anthers.

Psammisia pacifica sp. nov.

Frutex epiphyticus corolla juvenili excepta ubique glaber, ramis dependentibus, ramulis elongatis teretibus; petiolis rugosis teretibus crassis (2-3 mm. diametro) 7-10 mm. longis; laminis in sicco chartaceo-coriaceis fuscis anguste oblongo-ellipticis, 17-22 cm. longis, 5-7 cm. latis, basi gradatim angustatis, apice in acuminem 8-15 mm. longum obtusum terminantibus, margine integris, e basi 5-nerviis, costa nervisque duobus proximis apicem fere attingentibus supra valde impressis subtus prominentibus, nervis basalibus duobus marginalibus inconspicuis utrinque prominulis, rete venularum copioso utrinque plus minusve prominulo;

inflorescentiis ex axillis foliorum plerumque delapsorum ortis racemosis 7-15-floris basi bracteis paucis minutis circumdati, rhachi 3-5 cm. longa leviter angulata 2-3 mm. diametro, floribus bracteis papyraceis oblongis obtusis 4-5 mm. longis mox caducis subtentis; pedicellis teretibus rugulosis crassis (1.5-2 mm. diametro) sub anthesi 16-22 mm. longis, apicem versus conspicue bibracteolatis, bracteolis subcoriaceis oblongo-deltaideis acutis 2-3.5 mm. longis; calyce coriaceo late campanulato sub anthesi 5-7 mm. longo et apice 7-9 mm. diametro, tubo cupuliformi ruguloso 2-3 mm. longo, limbo subpatente quam tubo paullo longiore, lobis 5 late apiculato-deltaideis circiter 1 mm. longis, sinibus rotundatis vel fere complanatis; corolla subcarnosa cylindrico-urceolata sub anthesi 28-35 mm. longa, basim versus 5-7 mm. diametro, faucibus angustata, juventute distaliter obscure et pallide puberula mox glabrescente, profunde 5-lobata, lobis oblongo-deltaideis subacutis 3-4 mm. longis 2-3 mm. latis demum recurvatis; staminibus 10, 11-12 mm. longis, filamentis in tubum subcarnosum circiter 4 mm. longum connatis demum subliberis, connectivis carnis gracilibus apice bicalcaratis, calcaribus staminum alternorum subobscuris et conspicuis, conspicuioribus patenti-recurvatis obtusis circiter 0.5 mm. longis, antheris 9-9.5 mm. longis, thecis 1-1.2 mm. crassis basi abrupte incurvatis et obtusis, tubulis quam thecis paullo brevioribus inferne connatis apice liberis per rimas ovals circiter 2 mm. longas dehiscentibus; stylo crasso tereti sub anthesi quam corolla paullo longiore apice truncato.

COLOMBIA: El Valle: Costa del Pacifico, Río Cajambre: Silva, 5-80 m. alt., *Cuatrecasas 17616* (GH, TYPE), 5-15 mayo 1944 (frutex epifito con ramas péndulas; hoja coriácea, verde amarillento oscuro; pedúnculos, cáliz y dos tercios corola cárdenos; extremo de la corola blanco).

Psammisia pacifica is a species of the general affinity of the montane *P. macrophylla* (H. B. K.) Kl., from which it differs in having its leaf-blades distinctly narrowed toward the base with the principal nerves oriented from the extreme base, in having its calyx smaller, with a more spreading limb and less obvious lobes, and in having its filaments, at least in fairly mature flowers, connate. In this last character the new species suggests *P. columbiensis* Hoer., a species with smaller leaves, smaller flowers, and more obvious calyx-lobes. From both the mentioned species, *P. pacifica* differs in having the sinuses of its calyx rounded or flattened rather than obviously acute.

Psammisia aberrans sp. nov.

Arbor parva ad 6 m. alta corollis juvenilibus exceptis glabra, ramulis gracilibus teretibus vel hornotinis obtuse angulatis; petiolis rugulosis teretibus crassis (2-3 mm. diametro) 1-1.5 cm. longis; laminis siccitate chartaceis fuscis oblongo-ellipticis, (14-) 18-20 cm. longis, 6-8 cm. latis, basi acutis vel cuneatis, apice in acuminem 13-20 mm. longum obtusum abrupte angustatis, margine leviter recurvatis, e basi 5-nerviis, costa nervisque duobus proximis suprabasalibus apicem fere attingentibus supra leviter impressis subtus prominentibus, nervis basalibus duobus extremis submarginalibus supra paullo subtus valde prominulis, rete venularum conspicuo utrinque prominulo; inflorescentiis e ramulis infra folia ortis breviter racemosis 7-15-floris basi bracteis minutis deltaideis paucis circumdati, rhachi 1-2 cm. longa obtuse angulata circiter 2 mm. diametro,

floribus bracteis papyraceis oblongo-deltaideis subacutis 2-3.5 mm. longis caducis subtentis; pedicellis teretibus 1-1.5 mm. diametro sub anthesi 13-25 mm. longis medium versus bibracteolatis, bracteolis bracteis basilibus similibus; calyce subcoriaceo campanulato sub anthesi 7-9 mm. longo et apice diametro, tubo cupuliformi circiter 4 mm. longo, limbo erecto-patente tubum subaequante, in lobis 4 vel 5 irregulariter fisso, lobis ovato-deltaideis 1.5-3.5 mm. longis 3-5 mm. latis apice acutis vel apiculatis margine leviter incrassatis, sinibus acutis; corolla subcarnosa cylindrico-urceolata sub anthesi 28-32 mm. longa, basim versus 7-9 mm. diametro, superne angustata, juventute distaliter minute brunneo-puberula glabrescente, lobis 5 oblongis subacutis circiter 3×2 mm.; staminibus 10, 12-13 mm. longis, filamentis submembranaceis liberis ligulatis 3-4 mm. longis, connectivis gracilibus carnosus apice alternatim leviter incrassatis ecalcaratis; antheris 10-11 mm. longis gracilibus, thecis circiter 1 mm. crassis in basim subacutam incurvatam leviter productis, tubulis quam thecis paullo brevioribus liberis vel subconnatis per rimas ovaes circiter 2 mm. longas dehiscentibus; stylo crasso tereti corollam subaequante apice truncato.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Anchicayá, lado derecho, bosques entre Pavas y Miramar, 350-450 m. alt., *Cuatrecasas* 14392 (GH, TYPE), 16 abril 1943 (arbolito de 6 metros; tallo 10 cm. diámetro; pedúnculos y cáliz rosado-cárdenos; mitad o dos tercios inferiores de la corola rojo-cárdenos, parte superior blanca; fruto verde).

Psammisia aberrans is superficially very suggestive of the preceding new species (*P. pacifica*), but it is distinguished by obvious characters pertaining to its calyx, of which the lobes are large and the sinuses acute, and its anthers, which are unspurred. Furthermore, the new species differs from *P. pacifica* in having the inner pair of secondaries of its leaves concurrent with the costa for 5-10 mm., its rachis much shorter, its pedicels less highly bracteolate, and its filaments free. From *P. macrophylla* (H. B. K.) Kl., perhaps a closer relative, the new species differs in its leaf-base, its less prominent fourth and fifth basal nerves, its shorter rachis and pedicels, and its unspurred anthers.

The advisability of placing in *Psammisia* a species with ecalcarate anthers may well be questioned, and indeed will be questioned by students following Macbride's suggestion (in *Univ. Wyom. Publ.* 11: 43, 44. 1944) that *Psammisia* and *Macleania* be combined and even submerged in *Thibaudia*. Although the presence of anther-spurs has long been used as the most obvious character separating *Psammisia* from *Macleania*, there are also supplementary characters of habit and foliage which serve to distinguish these two groups in the eyes of most students of the family. Other species of *Psammisia*, namely *P. pseudiflora* (Dun.) Kl., *P. Hookeriana* Kl., and *P. Ulbrichiana* Hoer., have frequently obscure anther-spurs; but their relationships, like those of *P. aberrans*, are clearly with species of *Psammisia* with spurred anthers.

As to the advisability of reducing *Psammisia* and *Macleania* to *Thibaudia*, this seems to the writer quite unjustified, since at any rate the three groups would presumably be maintained as strong subgenera or sections, thus accomplishing nothing but further confusion of the generally accepted nomenclature. The shifting of coherent groups of species

from generic to subgeneric rank does not necessarily clarify the complexities of reticulate phylogeny. Admittedly the problem of small vs. large genera is often solved by personal taste; in the Vacciniaceae I see no reason at present to combine the genera of "Thibaudieae" into larger concepts, merely because some students still maintain *Vaccinium* in an inclusive unwieldy sense. As to the traditional division of the family into Vaccinieae and Thibaudieae, this has been considered unsound by recent students (e.g., the writer in Jour. Wash. Acad. Sci. 33: 243. 1943); but this fact in itself does not prejudice the status of generic concepts.

Thibaudia pachypoda sp. nov.

Frutex epiphyticus ubique filamentis interdum exceptis glaber, ramulis apicem versus 3-6 mm. crassis conspicue angulatis, vetustioribus teretibus cinereis decorticantibus; petiolis crassis (2-3 mm. diametro) 7-15 mm. longis rugosis leviter biangulatis; laminis rigide coriaceis siccitate olivaceis ovato-ellipticis, 8-15 cm. longis, 4-8 cm. latis, in basim cuneatam in petiolum decurrentem angustatis, apicem versus gradatim attenuatis et in acuminem callosum brevem ad 10 mm. longum cuspidatis, margine integris et incrassato-recurvatis, subtus disperse brunneo-glanduloso-punctatis, pinnatinerviis, costa supra paullo subtus valde prominente, nervis secundariis utrinsecus plerumque 3 adscendentibus curvatis anastomosantibus supra prominulis subtus valde elevatis, rete venularum conspicuo utrinque plus minusve prominulo; inflorescentiis axillaribus breviter racemosis 2-5-floris, rhachi crassa angulata 3-10 mm. longa basim versus bracteis minutis paucis caducis ornata, bracteis floriferis subcoriaceis oblongis obtusis circiter 3 mm. longis; pedicellis sub anthesi 3-4 cm. longis crassis (in sicco basi circiter 1.5 mm. diametro superne ad 3-4 mm. diametro incrassatis, in vivo ut videtur carnosius subteretibus), cum calyce conspicue articulatis, 1-4 mm. supra basim bibracteolatis, bracteolis subcoriaceis deltoideis subacutis circiter 2 mm. longis; calyce coriaceo cupuliformi siccitate ruguloso 8-10 mm. longo apice 7-8 mm. diametro, tubo 4-5 mm. longo basi rotundato, limbo erecto tubum subaequante vel paullo excedente inconspicue 5-denticulato, dentibus 0.3-0.5 mm. longis, sinibus complanatis, disco pulvinato centro depresso; corolla carnosia cylindrica sub anthesi 27-31 mm. longa et basim versus 7-8 mm. diametro, superne gradatim angustata, lobis 5 oblongo-deltoideis obtusis 2-2.5 mm. longis et latis; staminibus 10 corollam fere aequantibus, 23-26 mm. longis, filamentis submembranaceis liberis ligulatis 3-5 mm. longis glabris vel margine interdum obscure pallide ciliolatis, antheris elongatis 21-24 mm. longis, thecis circiter 1.5 mm. crassis basi subacutis et leviter incurvatis in tubulos gradatim transeuntibus, tubulis quam thecis duplo brevioribus per rimas elongatas dehiscentibus; stylo crasso tereti quam corolla paullo breviori apice leviter incrassato.

COLOMBIA: El Valle: Río Calima (región del Chocó), La Trojita, 5-50 m. alt., *Cuatrecasas 16616* (GH, TYPE), 19 febr.-10 mar. 1944 (frútex epifito; hoja gruesa, coriácea, rígida, verde claro; pedúnculo cárdeno; cáliz rosado; corola rosada o rosado-blanquecina o blanco-violácea); Costa del Pacífico, Río Yurumanguí: Veneral, bosques, 5-50 m. alt., *Cuatrecasas 15824* (GH) (frútex epifito; hoja rígida, coriácea, verde claro; pedúnculo rojo con el extremo blanco-verdoso; cáliz verdoso-blanquecino; corola blanco-verdosa).

This striking species is characterized by its coriaceous coarsely veined

leaf-blades, stout pedicels, large thick flowers, and very long stamens. Its only close allies are *T. Andrei* A. C. Sm. (known only from Nariño at presumably low elevations) and *T. rigidiflora* A. C. Sm. (from montane Colombia). From *T. Andrei* the new species is distinguished by its cupuliform rather than distinctly apophysate calyx-tube and its proportionately short calyx-limb, from *T. rigidiflora* by its distally tapering and pointed rather than obtuse leaf-blades, its larger (but similarly shaped and proportioned) calyx, and its longer stamens. From both of its allies, *T. pachypoda* differs in its shorter rachis and longer and stouter pedicels and corollas.

Thibaudia Archeri A. C. Sm. in Contr. U. S. Nat. Herb. 28: 426. pl. 12. 1932.

COLOMBIA: El Valle: Costa del Pacífico, Río Cajambre: Barco, 5–80 m. alt., *Cuatrecasas 17259* (GH) (frútex bejuco; pedúnculos y ramas de la inflorescencia rosado-cárdenos; frutos blancos; corola blanca); Costa del Pacífico, Río Yurumanguí: El Papayo, bosques, 10–20 m. alt., *Cuatrecasas 15986* (GH) (epífita).

These gratifying collections, the second and third of the species, extend its range southward from the type-locality in El Chocó. Our plants are identical with the type in all respects, except that they have frequently larger leaf-blades (up to 32×9 cm.) and slightly shorter filaments (3–4 mm. long in mature flowers).

Thibaudia parvifolia (Benth.) Hoer. in Bot. Jahrb. 42: 275. 1909; A. C. Sm. in Contr. U. S. Nat. Herb. 28: 428. 1932.

COLOMBIA: El Cauca: Cordillera Central, Páramo del Puracé al sur del Volcán en el filo de la Cordillera: San Francisco, 3400–3450 m. alt., *Cuatrecasas 14593* (GH) (frútex de 2 m.; corola rojo vivo; cáliz rojizo), *14674A* (GH) (frútex; hoja crasocoriácea, verde claro; corola roja).

To my knowledge this attractive small-flowered *Thibaudia* has not otherwise been collected since Hartweg obtained the type, also in El Cauca at high altitude. Although our specimens are identical with the type in all essential details, the following variation should be noted: leaf-blades somewhat broader, not quite so strongly revolute or sulcate as those of the type; pedicel longer, up to 14 mm. long; calyx-tube glandular-strigillose at base; corolla dispersed-glandular-strigillose without as well as faintly puberulent. No. *14593* bears essentially mature fruits, which are ellipsoid, about 10×7 mm., rugulose, surmounted by the persistent conspicuous calyx-limb.

Thibaudia aurantia sp. nov.

Frutex ramulosus, ubique (i.e. ramulis, foliis, bracteis bracteolisque, pedicellis, calycibus corollisque) pilis mollibus cinereo-albis patulis 0.5–1 mm. longis dense indutus; ramulis gracilibus subteretibus demum glabrescentibus; petiolis subteretibus inconspicuis 2–3 mm. longis; laminis coriaceis ovatis, 2–3 cm. longis, 1.5–2.2 cm. latis, basi rotundato-subcordatis, apice acutis et callosio-apiculatis, margine integris et valde inercassatis, utrinque minute rugulosis, supra demum subglabrescentibus, costa supra subplana subtus paullo elevata, nervis secundariis utrinsecus 2 vel 3 e basi vel intimis e costa prope medium orientibus utrinque obscuris vel subtus leviter elevatis, venulis immersis; inflorescentia uniflora axillari bracteis 2 linearibus 4–5 mm. longis caducis subtenta, bracteis sub floribus

ut videtur 2 vel 3 papyraceis oblongo-lanceolatis 3-3.5 mm. longis subacutis intus glabris; pedicellis sub anthesi 2-2.5 cm. longis basim versus bracteolas 2 bracteis similes gerentibus, cum calyce inconspicue articulatis; calyce sub anthesi 7-9 mm. longo, tubo cupuliformi circiter 3.5 mm. longo et diametro basi rotundato, limbo erecto-patente tubum paullo excedente papyraceo intus glabro et multinervio profunde 5-lobato, lobis ovatis acute cuspidatis 3-4 mm. longis circiter 3 mm. latis, sinibus acutis, disco annulari-pulvinato glabro; corolla tenuiter carnosa cylindrica sub anthesi 19-21 mm. longa et circiter 7 mm. diametro, intus praeter apices loborum tomentellos glabra, lobis 5 ovato-deltaeideis obtusis circiter 1.5×3 mm.; staminibus 10 circiter 11 mm. longis, filamentis membranaceis in tubum 3-3.5 mm. longum dorso distaliter pallide tomentellum connatis, connectivis gracilibus pilosis superne furcatis, antheris 8-8.5 mm. longis, tubulis quam thecis paullo longioribus per rimas ovaes 1.2-1.5 mm. longas dehiscentibus; stylo gracili tereti corollam subaequante, stigmatibus obscure peltato.

COLOMBIA: El Cauca: Cordillera Central, vertiente oriental cerca del filo: Quebrada del Río San Marcos, entre Jardín y San Rafael, 2700-2900 m. alt., *Cuatrecasas 14762* (GH, TYPE), 25 julio 1943 (frutex ramificado; corola anaranjada, ápice blanquecino).

This well-marked species has no close described relatives in Colombia, belonging to a group of species otherwise known from Peru and Bolivia (spp. 36-40 in my treatment in *Contr. U. S. Nat. Herb.* 28: 410-439. 1932). It is readily distinguished from all of these and from more recently described entities of this group by its pubescent habit, small ovate callose-apiculate leaf-blades with thickened entire margins, one-flowered inflorescences, and deeply lobed calyx-limb.

Thibaudia mundula sp. nov.

Frutex, ramulis teretibus cinereo-puberulis subglabrescentibus; petiolis semiteretibus rugulosis parce puberulis 3-5 mm. longis; laminis coriaceis ovato-ellipticis, 15-21 mm. longis, 9-12 mm. latis, basi late obtusis, apice calloso-apiculatis, margine subintegris (obscure glanduloso-denticulatis) recurvatis incrassatis, utrinque disperse nigro-punctatis juventute minute puberulis mox glabris, costa supra obscure impressa subtus inconspicue elevata, nervis lateralibus paucis venulisque immersis; inflorescentia axillari 1- vel 2-flora bracteis obscuris lineari-oblongis circiter 2.5 mm. longis subtenta, bracteis floriferis papyraceis ovato-deltaeideis acutis 1-2 mm. longis extus parce pilosis; pedicellis calycibus corollisque pilis pallidis 0.2-0.5 mm. longis indutis, pedicellis rugulosis subteretibus sub anthesi 10-13 mm. longis basim versus bracteolas 2 bracteis similes gerentibus, cum calyce articulatis; calyce sub anthesi circiter 6 mm. longo, tubo cupuliformi circiter 3 mm. longo et 2.5 mm. diametro basi rotundato obscure brunneo-glanduloso-strigilloso, limbo erecto-patente tubum subaequante papyraceo intus glabro et 5-nervio, lobis 5 deltaeideis subacutis circiter 2×2.5 mm., sinibus obtusis, disco annulari-pulvinato glabro; corolla tenuiter carnosa cylindrica sub anthesi 13-15 mm. longa et circiter 5 mm. diametro, intus praeter apicem parce pilosum glabra, lobis 5 deltaeideis obtusis circiter 1×2.5 mm.; staminibus 10 circiter 10 mm. longis, filamentis membranaceis in tubum circiter 5 mm. longum dorso distaliter obscure puberulum connatis, connectivis gracilibus pallide pilosis apice furcatis, antheris circiter 6 mm. longis, tubulis thecas subaequantibus per

rimas circiter 2 mm. longas dehiscentibus; stylo gracili corollam subaequante apice paulo incrassato.

COLOMBIA: El Cauca: Cordillera Central en la vertiente occidental del macizo del Huila: Cabecezas del Rio Palo, Quebrada del Rio López, quebradita del Duende, 3450 m. alt., *Cuatrecasas 19144* (A, TYPE), 6 dic. 1944 (frútex epifito; hoja craso-coriácea, verde claro, brillante en el haz, pálido en el envés; cáliz verdoso; corola vermellón).

Although *T. mundula* is obviously most closely related to the preceding new species (*T. aurantia*), numerous characters readily separate the two plants; the most obvious of these are conveniently expressed in a key:

Leaf-blades 20-30 × 15-22 mm., soft-pilose on both sides, rounded-subcordate at base; pedicels 20-25 mm. long; flowers soft-pilose with hairs 0.5-1 mm. long; calyx-limb with many nerves ascending from base and loosely anastomosing, the sinuses deeply acute; corolla 19-21 mm. long; filament-tube 3-3.5 mm. long, the anthers 8-8.5 mm. long.....*T. aurantia*.

Leaf-blades 15-21 × 9-12 mm., essentially glabrous, broadly obtuse at base; pedicels 10-13 mm. long; flowers closely pilose with hairs 0.2-0.5 mm. long; calyx-limb with 5 nerves, these terminating in lobes and with few lateral branches, the sinuses obtuse; corolla 13-15 mm. long; filament-tube about 5 mm. long, the anthers about 6 mm. long.....*T. mundula*.

Calopteryx gen. nov.

Calyx cum pedicello conspicue articulatus, tubo profunde ruguloso, limbo suberecto 5-lobato. Corolla e basi ad apices loborum conspicue 5-alata. Stamina 10 aequalis quam corolla paulo breviora, filamentis in tubum connatis antheris dorso apicem thecarum versus conjunctis, connectivo inconspicuo angusto, antheris erectis gracilibus, thecis leviter granulosis basi obtusis, tubulis e basi liberis flexibilibus amplis quam thecis multo longioribus per rimas elongatas introrsas dehiscentibus. Stylus quam corolla paulo brevior. Ovarium 5-loculare, placentis axillaribus e basi gracili incrassatis, ovulis minutis numerosissimis obtectis.

Plantae lignosae, ramulis elongatis, foliis alternatis estipulatis petiolatis, laminis magnis e basi plurinerviis. Inflorescentia e ramulis defoliatis orta paniculata ampla, ramulis floribusque bracteis parvis subpersistentibus sustentis, pedicellis bibracteolatis.

The name of this new genus, represented by the single species described below, is derived from *καλος*, beautiful, and *πτέριξ*, wing, referring to the long delicate wings of the corolla.

Calopteryx insignis sp. nov. FIG. 2.

Frutex epiphyticus inflorescentiis exceptis ubique glaber, ramulis floriferis robustis ad 2 cm. diametro cortice sublevi brunneo obductis, ramulis foliiferis gracilibus (2-3 mm. diametro) teretibus cinereis; petiolis subteretibus rugulosis incrassatis (2.5-4 mm. diametro) 7-10 mm. longis; laminis siccitate subcoriaceis fusco-olivaceis oblongo-lanceolatis, 27-36 cm. longis, 6-9 cm. latis, basi obtusis, in apicem caudatum plus minusve 2 cm. longum (apice ipso non viso) gradatim attenuatis, margine integris et leviter recurvatis, e basi 5 (vel inconspicue 7)-nerviis, costa nervisque principalibus adscendentibus elongatis supra impressis subtu prominentibus, nervis marginalibus brevibus inconspicuis utrinque prominulis, rete venularum laxo utrinque subprominulo; inflorescentia in specimine nostro floribus inclusis circiter 11.5 cm. longa et 15 cm. lata, pedunculo ramulisque crassis rugulosis parce brunneo-puberulis demum glabratibus, pedunculo brevi

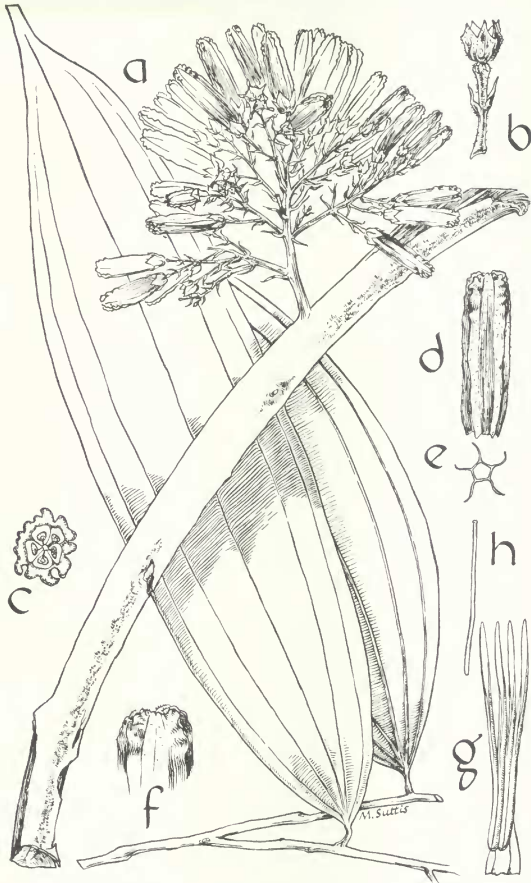


FIG. 2. *Calopteryx insignis*: a. flowering branchlet and a branchlet with two attached leaves, $\times \frac{1}{2}$; b. pedicel and calyx, $\times 1$; c. cross-section of ovary, $\times 2\frac{1}{2}$; d. corolla, $\times 1$; e. cross-section of corolla, $\times 1$; f. apex of corolla, $\times 1\frac{1}{2}$; g. two adjacent stamens, $\times 2$; h. style, $\times 1$.

(circiter 1.5 cm. longo) et rhachi 6-7 cm. longis, ramulis primariis circiter 8 patentibus, ramulis secundariis paucis; bracteis sub ramulis pedicellisque papyraceis concavis lanceolatis, 7-11 mm. longis, basi 2-3 mm. latis, in acuminem gradatim attenuatis, extus puberulis, intus glabris; pedicellis sub anthesi 9-18 mm. longis paullo complanatis validis, basi et apice incrassatis, infra articulationem 2-3.5 mm. diametro, pilis circiter 0.2 mm. longis brunneis dispersis indutis, medium versus conspicue bibracteolatis, bracteolis bracteis similibus 4-7 mm. longis circiter 2 mm. latis; calyce cupuliformi sub anthesi circiter 8 mm. longo et apice diametro, ut pedicellis piloso, tubo carnosio profunde ruguloso-sulcato sed non angulato sub anthesi circiter 5 mm. diametro, disco patelliformi subcarnoso glabro margine crenulato-serrulato, limbo membranaceo tubum subaequante intus glabro e basi inconspicue multinervio, lobis ovato-deltaoideis acutis 3-4 \times 4-5 mm., sinibus acutis; corolla in sicco membranacea in vivo forsitan carnosa, sub anthesi 28-35 mm. longa et alis inclusis 7-10 mm. diametro, ut pedicellis parce pilosa, apice ipso circiter 1.5 mm. diametro, alis membranaceis 2-4 mm. latis basi angustioribus distaliter obscure erosulis, lobis paullo incrassatis deltaoideis acutis circiter 1 mm. longis latisque; staminibus ubique glabris 25-27 mm. longis, filamentorum tubo membranaceo pallido 5-6 mm. longo, antheris membranaceis 23-25 mm. longis, thecis 4-5 mm. longis in tubulos 5-6-plo longiores gradatim transeuntibus; stylo filiformi circiter 0.5 mm. diametro, stigmatibus leviter incrassato truncato.

COLOMBIA: El Valle: Río Calima (región del Chocó), La Trojita, 5-50 m. alt., *Cuatrecasas 16295* (GH, TYPE), 19 febr.-10 mar. 1944 (arbusto epífito; tallo aspecto canoso; corola rosada o rojiza, dientes blancos).

In its isomorphic stamens with nearly smooth thecae and flexible tubules with clefts of indeterminate length, the entity described above agrees with *Thibaudia* R. & P. and several related genera. From all of these, however, it differs in characters which seem generic in quality. The long corollas with conspicuous wings extending along the entire length, the extremely elongate anther-tubules, and the copiously branching inflorescence are noteworthy characters. *Thibaudia* itself has cylindrical or at most lightly angled corollas, and its anthers have tubules rarely more than twice as long as the thecae. In foliage and general type of inflorescence, *Calopteryx* is suggestive of *Thibaudia Archeri* A. C. Sm. and its immediate relatives, and this may indeed represent the closest approach of the new genus to any described group. However, I do not believe that the concept of *Thibaudia* should be expanded to include a plant with such a conspicuously winged corolla and such extremely elongated anther-tubules. Although *Thibaudia* is already a rather heterogeneous aggregate (as noted by the writer in Bull. Torrey Bot. Club 63: 316. 1936), to include *Calopteryx* in it does not seem warranted. A contrary opinion would doubtless be expressed by students agreeing with Macbride, who (in Univ. Wyom. Publ. 11: 37-46. 1944) proposes to include in *Thibaudia* such genera as *Anthopterus* Hook., *Macleania* Hook., *Psammisia* Kl., *Diogenesia* Sleumer, and *Demosthenesia* A. C. Sm. It will be admitted that the characters of *Calopteryx* can be approximated here and there among the above genera; but for that matter so can the

characters of nearly every other genus of Vacciniaceae. In short, the genera in this family must be based upon combinations of characters, the value of various combinations resting upon personal opinion for the time being — but perhaps eventually upon genetic analysis. The alternative to recognizing small genera (although several have 25–100 species) in the Vacciniaceae seems to be to recognize very few, or perhaps only one. Should the latter course be followed, the resulting maze of subgenera, sections, and subsections would be quite unintelligible to the average student; such a treatment would hardly seem likely to clarify the sequence of species-development (*vide* Macbride, op. cit. 44).

Although perhaps it is most closely allied to *Thibaudia*, the new genus should also be compared with *Anthopterus* Hook. and *Plutarchia* A. C. Sm. From the first of these it differs in having its calyx articulate with the pedicel and unwinged, its anther-tubules much longer in proportion, its inflorescence paniculate, and its flowers much larger. *Plutarchia* is a group of north Andean compact small-leaved plants with unwinged corolla and few-flowered, compact, and axillary or subterminal inflorescence; in its elongate flexible anther-tubules *Plutarchia* suggests *Calopteryx*. In habit these three genera are entirely unlike.

Themistoclesia pterota sp. nov.

Frutex interdum epiphyticus, ramulis cinereis teretibus validis glabris; petiolis inconspicuis ad 1.5 mm. longis, foliis subsessilibus interdum subamplexicaulibus; laminis chartaceo-coriaceis in sicco olivaceis ubique glabris oblongo-ovatis, (4–) 6–9 cm. longis, 2.3–4.3 cm. latis, basi profunde cordatis, apice obtusis vel obtuse cuspidatis (acumine ad 5 mm. longo), margine paullo recurvatis, e basi 7- vel 9 (raro 11-) nerviis, costa et nervis interioribus supra leviter elevatis subtus subprominentibus, nervis secundariis valde arcuatis, exterioribus brevibus inconspicuis, rete venularum utrinque subimmerso haud prominulo; inflorescentia axillari pluriflora racemosa vel saepe in ramulos 2 vel 3 adscendentes divisa, rhachi ramulis pedicellisque gracilibus minute puberulis, bracteis sub ramulis floribusque subpersistentibus elliptico-oblongis 1–2 mm. longis; pedicellis 3–8 mm. longis saepe pluribracteolatis et calyce parce puberulis etiam obscure nigro-pilosis; calyce late turbinato circiter 5 mm. longo et lato, tubo anguste 5-alato, limbo papyraceo erecto-patente lobis inclusis circiter 1.5 mm. longo apice minute 5-denticulato et puberulo-ciliolato; disco conspicuo annulari-pulvinato glabro circiter 1.5 mm. diametro et 0.5 mm. alto; corolla tenuiter carnosa siccitate submembranacea glabra ad apices loborum anguste 5-alata urceolata, 6–7.5 mm. longa, basim versus 4–5 mm. diametro, faucibus ad 1.5 mm. diametro contracta, alis submembranaceis inferne 0.6–1 mm. latis superne angustioribus in lobis exeuntibus, lobis 5 deltoideis subacutis 0.7–1 mm. longis demum recurvatis; staminibus 10 quam corolla paullo brevioribus, filamentis pallidis membranaceis ligulatis alternatim 2–2.5 mm. et 2.5–3 mm. longis, medium versus laxe pilosis superne angustatis, antheris 4–4.5 mm. longis, tubulis quam thecis duplo longioribus per rimas circiter 1 mm. longas dehiscentibus; stylo 5.5–7 mm. longo truncato; bacca modo generis exsucca manifeste angulata quam calyce sub anthesi haud majore.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Rio Sanquinini, lado izquierdo, La Laguna, bosques, 1250-1400 m. alt., *Cuatrecasas 15422* (GH) (frútex; epifita), 15501 (GH TYPE), 10-20 dic. 1943 (frútex epifito; hoja coriácea, verde claro, brillante en el haz, verde blanquecino en el envés; cáliz verde claro; corola blanca; baya azul, blanda).

Themistoclesia pterota, although the essential characters of its flowers and fruits are those of *Themistoclesia*, differs from the other described species of the genus in its winged corollas, while the deeply cordate and subamplexicaul leaves are scarcely suggestive of the genus. Nevertheless, *Themistoclesia* seems indubitably to be the correct place for this remarkable plant. Its alliance is probably with *T. crassifolia* Sleumer, from which it differs not only in its corolla, but also in its short petioles, its smaller leaf-blades which are more deeply cordate at base and merely obtuse or obtusely cuspidate at apex, its sometimes branched inflorescence, and its shorter pedicels.

Themistoclesia epiphytica A. C. Sm. in Jour. Arnold Arb. 24: 470. 1944.

COLOMBIA: El Cauca: Cordillera Central: Páramo del Puracé al sur del Volcán en el filo de la Cordillera: San Francisco, 3400-3450 m. alt., *Cuatrecasas 14674* (GH) (frútex; hoja craso-coriácea verde claro; corola roja).

The cited collection represents a slight extension of range of this species, previously known from the highlands of Nariño and Putumayo. Both earlier collections are indicated as epiphytic, but at this altitude it is not surprising to find individuals of a species either terrestrial or epiphytic.

Cavendishia striata sp. nov.

Cavendishia complectens sensu A. C. Sm. in Contr. U. S. Nat. Herb. 28: 468. 1932, non Hemsl. nec A. C. Sm. op. cit. 448.

Frutex (semper?) epiphyticus ubique glaber, ramulis teretibus gracilibus (apicem versus 1.5-3 mm. diametro) interdum ruguloso-striatis; foliis subsessilibus saepe valde amplexicaulibus, petiolis validis angulatis ad 5 mm. longis sed plerumque subnullis; laminis coriaceis in sicco viridivivaceis late ovatis vel suborbicularibus, (5-)8-18 cm. longis, (5-)7-16.5 cm. latis, basi profunde cordatis, apice rotundatis, margine leviter recurvatis, 7-11-nerviis, nervis principalibus secundariis e basi vel ad 3 cm. supra basim orientibus arcuato-patentibus cum costa supra leviter elevatis vel subplanis subtus prominentibus, nervis basalibus extimis inconspicuis submarginalibus utrinque prominulis, rete venularum intricato utrinque perspicue prominulo; inflorescentia terminali vel subterminali racemosa 8-12-flora, basi bracteis parvis paucis imbricatis circumdata, pedunculo subnullo, rhachi sub anthesi 1.5-2.5 cm. longa obscure angulata 1.5-2 mm. diametro; bracteis floriferis papyraceis oblongo-ellipticis, 8-12 mm. longis, 5-8 mm. latis, apice rotundatis, margine obscure et saepe decidue glanduloso-ciliolatis, utrinque nervis adscendentibus parallelis numerosis conspicue striatis, interdum extus rugulosis; pedicellis teretibus 1-1.5 mm. diametro sub anthesi 1.5-8 mm. longis basim versus decidue bibracteolatis, bracteolis papyraceis oblongis subacutis fimbriolatis 2-4 × 1-2 mm.; calyce campanulato sub anthesi 5.5-7.5 mm. longo et apice 3.5-6 mm. diametro, tubo cupuliformi 2-2.5 mm. longo basi truncato-rotundatis, limbo papyraceo vel subcoriaceo suberecto 3.5-5 mm. longo intus venis parallelis validis striato profunde 5-lobato, lobis oblongis 1.5-3 × 1.5-2.5 mm. apice rotundatis vel obtusis margine glanduloso-ciliolatis et anguste imbricatis,

sinibus acutis; corolla tenuiter carnosae cylindrico-urceolata, sub anthesi 6–10 mm. longa et medium versus 2.5–4 mm. diametro, apice contracta, lobis 5 oblongo-deltaideis subacutis circiter 1×1 mm.; staminibus 10 subaequalibus 5–7 mm. longis, filamentis membranaceis ligulatis alternatim 2–2.5 mm. et 3–3.5 mm. longis interdum distaliter inconspicue hispidulis, antheris alternatim 2.5–5.5 mm. et 2–5 mm. longis, thecis 1–2 mm. longis, tubulis quam thecis longioribus fere ad basim fissis; stylo gracili tereti quam corolla paullo breviori, stigmate truncato.

COLOMBIA: El Chocó: Andagoya, alt. 70–100 m., *Killip 35066* (A, NY, US) (epiphytic shrub in second growth forest; bracts white); El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Digua, lado derecho, La Elsa, bosques, 1000–1200 m. alt., *Cuatrecasas 15306* (GH, TYPE), 9 nov. 1943 (frútex epífito, ramoso, divaricado; hoja craso-coriácea, verde claro, brillante en el haz, mate envés; bráctees rojo carmín; pedúnculos rosados; cáliz verde blanquecino; corola en los tercios inferior y superior blanca, en la mitad negra); Hoya del Río Sanquinini, lado izquierdo, La Laguna, bosques, 1250–1400 m. alt., *Cuatrecasas 15430* (GH) (frútex epífito; hoja craso-coriácea verde claro, rígida; bráctees rosado-cárneas; cáliz blanco; corola en la $\frac{1}{2}$ inf. gris o negra, $\frac{1}{2}$ sup. blanca); El Cauca: "La Gallera," Micay Valley, alt. 1800–2000 m., *Killip 7909* (NY) (in forest); ad pag. El Tambo, La Costa, alt. 800 m., *von Sneider 838* (NY) (in silva primaeva). [ECUADOR: Pichincha: Nono, *Sodiño 92/36* (Bot. Mus. Berlin, not now available).]

In 1932 I cited two South American collections as representing *C. compectens* Hemsl., the type of which is Costa Rican, but the accumulation of additional good flowering collections from Colombia in the interim has made a reconsideration of this complex desirable. It now seems that rather obvious characters of the bracts and calyx make it inadvisable to include the Colombian material in *C. compectens*, which is, however, closely allied. The chief differences between the two entities may be summarized as follows:

- Flower-subtending bracts striate, the principal veins parallel, ascending, strongly raised on both surfaces; rachis 1.5–2.5 cm. long; calyx-lobes oblong, longer than broad (1.5–3 \times 1.5–2.5 mm.), narrowly imbricate, striate within with strong parallel veins; western Colombia and Ecuador.....*C. striata*.
- Flower-subtending bracts smooth on both surfaces, not striate, the venation obscurely reticulate, immersed; rachis 3–10 cm. long; calyx-lobes broadly ovate-suborbicular, broader than long (2.5–4 \times 3–4.5 mm.), conspicuously and broadly imbricate, narrowed at base, smooth on both surfaces, the venation reticulate, immersed; Costa Rica and Panama.....*C. compectens*.

In texture of bracts, *C. striata* is suggestive of two Panamanian species recently described by the writer — *C. gaultherioides* and *C. Allenii* — but characters of foliage and flowers readily separate these two species from both the new entity and *C. compectens*. *Cavendishia striata* has an unusually broad altitudinal range, extending from near sea-level up to 1800–2000 m.

Cavendishia compacta A. C. Sm. in Contr. U. S. Nat. Herb. 28: 468. 1932.

COLOMBIA: El Valle: Río Calima (región del Chocó), La Trojita, 5–50 m. alt., *Cuatrecasas 16316* (GH) (arbusto epífito; hoja coriácea, rígida, verde brillante en el haz, mas claro el envés; bráctees rosado-cárneas; cáliz y corola blancos o blanco-rosados; fruto azul); El Chocó: Entre Carmen de Atrato y Tutunendo, valle del alto Atrato, 500–600 m. alt., *García-Barriga 11124* (US), 11127 (US) (árbol 3–4 m.; bráctees amarillo-rojas; flores rosadas).

The cited specimens are fundamentally similar to the type of this very distinct species, but they are slightly more robust throughout, having leaf-blades up to 9 cm. broad, corollas up to 24 mm. long, and other inflorescence-parts correspondingly large. As in the case of *Satyria grandifolia*, discussed below, there is reasonable doubt as to the actual locality and altitude of the Triana type-specimen. The label of the type-sheet at Kew reads: "Cordillère du Choco, Prov. de Cauca & Choco, hauteur 1800 metr." It is quite possible that the species has a narrower altitudinal range than indicated by the Triana label.

Cavendishia tenella sp. nov.

Frutex ubique glaber, ramulis crassis (distaliter 4-7 mm. diametro) in vivo ut videtur molliter teneribus in sicco acute angulatis; petiolis foliorum maturorum rugulosis validis 1-2 cm. longis canaliculatis superne conspicue alatis; laminis maturis chartaceo-coriaceis in sicco supra metallico-viridibus subtus pallidioribus brunneo-glanduloso-punctatis, elliptico-oblongis, 8-13 cm. longis, 4-7 cm. latis, basi obtusis et subito in petiolum late decurrentibus, apice obtuse cuspidatis, margine leviter revolutis, plerumque 7-nerviis, costa et nervis 4 superioribus e basi orientibus (vel intimis ad 1 cm. concurrentibus) adscendentibus supra impressis subtus prominentibus, nervis extimis submarginalibus inconspicuis utrinque prominulis, rete venularum copiose intricato utrinque prominulo; inflorescentia subterminali (vel axillari?) racemosa ad 10 cm. longa basi cicatricibus pluribus bractearum caducarum notata, plus minusve epedunculata, multiflora, rhachi crassa (2.5-4 mm. diametro) leviter angulata basi pedicellorum incrassata; floribus ut videtur 35-50, bracteis floriferis submembranaceis ellipticis, circiter 15 mm. longis, paullo angustioribus, apice rotundatis, margine integris scariosis; pedicellis teretibus 3-7 mm. longis crassis (1-1.5 mm. diametro, apice ad 3 mm. conspicue incrassatis) medium versus bibracteolatis, bracteolis subcarnosis oblongis obtusis circiter 1.5 mm. longis margine copiose glanduliferis; calyce carnosio-coriaceo campanulato sub anthesi 7-8 mm. longo et 5-7 mm. diametro, basi rotundato, tubo brevi 1.5-2.5 mm. longo, disco centro depresso, limbo erecto tubum multo excedente, lobis 5 oblongis 4-4.5 mm. longis circiter 5 mm. latis, apice rotundatis vel leviter emarginatis, margine glanduloso-incrassatis et valde imbricatis; corolla molliter carnosa cylindrico-urceolata 10-11 mm. longa, medium versus 5-6 mm. diametro, apice ad 3 mm. diametro contracta, lobis 5 deltoideis obtusis circiter 1 x 1.5 mm.; staminibus 10 subaequalibus circiter 9 mm. longis, filamentis membranaceis primo subconnatis mox liberis ligulatis, alternatim circiter 2.5 mm. et 3.5 mm. longis, superne angustatis et obscure pilosulis, antheris alternatim circiter 8.5 mm. et 7.5 mm. longis, thecis circiter 3 mm. longis, tubulis thecas excedentibus, rimis elongatis; stylo tereti corollam subaequante, stigmatibus obscure peltatis.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Anchicayá, lado derecho, bajando a La Planta, bosques, 200-350 m. alt., *Cuatrecasas 15210* (GH, TYPE), 27 sept. 1943 (gran frutex; bráctees blancas; cáliz verde claro, luego con bordes rosado-violáceos; corola verdoso-pálida con el extremo más o menos rosado, semi-transparente, cérea, con estrecha coronita rosada, con 5 dientes cortos de borde violáceo; ramas muy tiernas (cogollos) con un penacho de hojas cárdeno vivo, ténues, con un involúcro de estípulas blancas).

This striking plant is to be associated with a small group of species

characterized by imbricate calyx-lobes and very short pedicels, occurring from Costa Rica to Pacific Colombia. The closest ally of *C. tenella* is doubtless *C. compacta* A. C. Sm., from which it differs in having its branchlets apparently softer and hence angled in drying, in having its petioles conspicuously angled by means of the long-decurrent bases of leaf-blades, in its differently shaped leaf-base, much shorter leaf-apex, and more basally oriented secondaries, in its more densely flowered racemes, and in its much shorter corolla and stamens.

Cavendishia praestans sp. nov.

Frutex plerumque epiphyticus ubique corollis filamentisque exceptis glaber, ramis saepe crassis nodosis, ramulis subteretibus cinereis rugulosis; petiolis subteretibus rugulosis validis (5-) 8-17 mm. longis; laminis subcoriaceis in sicco fusco-olivaceis oblongis vel anguste elliptico-oblongis, (7-) 15-25 cm. longis, (2-) 5-11 cm. latis, basi truncato-rotundatis vel leviter subcordatis, in apicem plerumque 1-3 cm. longum obtusum vel subacutum subito angustatis, margine anguste recurvatis, subtus interdum brunneo-punctatis, 5- vel 7-nerviis, costa et nervis 4 principalibus e basi orientibus vel paulo suprabasalibus supra impressis subtus prominentibus, nervis extimis marginalibus inconspicuis, rete venularum intricato utrinque prominulo; inflorescentia terminali vel apicem ramulorum versus axillari racemosa multiflora basi bracteis numerosis imbricatis (extimis minoribus, intimis bracteis floriferis similibus) circumdata, rhachi robusta 2-4 mm. diametro obtuse angulata (5-) 8-15 cm. longa, bracteis floriferis (juventute valde imbricatis) submembranaceis vel papyraceis ovato- vel obovato-oblongis 15-30 × 10-20 mm. apice rotundatis; pedicellis subteretibus crassis (basi circiter 1 mm. diametro superne ad 2 mm. infra articulationem incrassatis) sub anthesi 5-15 mm. longis, basim versus bibracteolatis, bracteolis papyraceis ovato-oblongis acutis 3-4.5 mm. longis 1.5-2 mm. latis distaliter calloso-incrassatis; calyce oblongo sub anthesi 6-8 mm. longo et apice 5-7 mm. diametro, tubo sulcato 2-3 mm. longo superne leviter constricto, limbo erecto subcoriaceo 4-5.5 mm. longo, lobis 5 deltoideis acutis 1.5-2.5 × 2.5-3 mm. ubique conspicue calloso-incrassatis, sinibus obtusis; corolla in sicco submembranacea (in vivo forsan tenuiter carnosa) cylindrica, 17-23 mm. longa, 5-7 mm. diametro, utrinque leviter angustata, extus pilis 0.5-1 mm. longis pallidis copiose hispidula, lobis 5 oblongo-deltoideis obtusis 1.2-2 mm. longis latisque; staminibus subaequalibus corollam fere aequantibus (15-21 mm. longis), filamentis submembranaceis ligulatis angustis interdum sparse hispidulis alternatim 2.5-5 mm. et 7-10 mm. longis, antheris alternatim 14-19 mm. et 10-13 mm. longis, thecis 6-9 mm. longis basi obtusis, tubulis thecas subaequantibus, rimis elongatis; stylo corollam subaequante tereti circiter 0.5 mm. diametro, stigmatibus truncato; fructibus juvenilibus ad 7 mm. diametro basi incrassatis apice limbo calycis coronatis.

COLOMBIA: El Chocó: Dense forest south of Río Condoto, between Quebrada Guarapo and Mandinga, alt. 120-180 m., *Killip* 35127 (A, US) (epiphyte; bracts pink); banks of Quebrada Togoromá, in dense tidal forest, *Killip & Cuatrecasas* 39145 (A, US) (epiphytic shrub; calyx pinkish white, shiny; corolla pink, with white hairs); Río San Juan, cercanías de Palestina, 5-50 m. alt., *Cuatrecasas* 16917 (GH) (frútex epifito; hoja coriácea, rígida, verde claro; pedúnculos blancos; cáliz blanco-rosado; bráctees rosadas); El Valle: Estero de Bodegas, south shore of Buenaventura Bay, in man-

grove swamp along Río Potedó, *Killip & Cuatrecasas 38678* (A, TYPE, US), June 2, 1944 (shrub; bracts pink; corolla white); Agua Clara, along highway from Buenaventura to Cali, alt. about 100 m., in dense forest, *Killip & Cuatrecasas 38880* (A, US) (epiphytic shrub; bracts pink; calyx pinkish white; corolla white); Río Dagua, in forest about 20 km. east of Buenaventura, alt. about 40 m., *Killip & García 33305* (US) (shrub, along stream; bracts red; corolla white); Costa del Pacífico, Río Cajambre: Quebrada del Corosal, 0-5 m. alt., *Cuatrecasas 17733* (arbusto epifito; hoja coriácea, rígida, verde brillante haz, claro y brillante envés; brácteas rosado-cárdenas; corola peluda, blanca); Estero del Cangrejal, entre las bocanas de los Ríos Yurumanguí y Naya, *Cuatrecasas 16020* (GH) (arbusto epifito del mangle; brácteas y cáliz rosados; corola blanca; hoja rígida coriácea, verde pálido); Antioquia: Guapá, 53 km. south of Turbo (Golfo de Uraba), alt. about 60 m., *Haught 4603* (A, US) (epiphytic shrub in crown of forest; bracts pink; corolla white).

From *C. hispida* A. C. Sm., its closest ally, the new species differs primarily in having its branchlets and leaves, even in a young state, strictly glabrous rather than copiously hispid-pilose. The leaf-blades of *C. hispida* are more or less subbullate, the principal veinlets being impressed above, whereas in *C. praestans* the veinlets are prominulous on both surfaces. The inflorescence of the new species is more robust and more copiously floriferous than that of *C. hispida*, and its corollas (similarly pubescent) are somewhat shorter. Although these differences are not of a striking nature, they are constant among the available specimens. Admittedly the group composed of these two species, *C. bomareoides*, and *C. splachnoides* needs further consideration on the basis of more ample material.

The occurrence of the new species in the Atlantic littoral of Antioquia is particularly interesting, suggesting that other species of the Pacific coast are to be expected around the mouth of the Río Atrato.

Cavendishia violacea sp. nov.

Frutex epiphyticus post anthesin ubique glaber, ramulis apicem versus gracilibus (2-3 mm. diametro) dense foliatis leviter angulatis subviolaceis mox subteretibus et cinereis; petiolis 2-5 mm. longis subteretibus rugulosis; laminis coriaceis subbullatis oblongis, (4-) 7-10 cm. longis, (1.7-) 2.5-4.5 cm. latis, basi truncato-rotundatis, apice in acuminem 1-2 cm. longum acutum attenuatis, margine paulo recurvatis, pinnatinerviis, costa supra conspicue elevata subtus prominente, nervis secundariis utrinsecus 3-5 e costa infra medium orientibus adscendentibus parallelis subrectis supra in sulculis leviter prominulis subtus valde elevatis, rete venularum copiose intricato utrinque paulo prominulo; inflorescentia axillari vel terminali racemosa 10-15-flora basi bracteis imbricatis ad 15 mm. longis (extimis multo minoribus) circumdata, bracteis floriferis submembranaceis elliptico-oblongis, 15-17 mm. longis, 7-12 mm. latis, basi et apice rotundatis, inconspicue nervatis, pedunculo subnullo, rhachi post anthesin crassa obtuse angulata 5-10 cm. longa; pedicellis teretibus post anthesin 7-13 mm. longis, basim versus circiter 1 mm. diametro. apice leviter incrassatis et articulatione glandulas parvas oblongas 6-8 gerentibus, basim versus minute bibracteolatis, bracteolis subcoriaceis oblongis obtusis 0.5-0.7 mm. longis; calyce post anthesin circiter 5 mm. longo et apice 6 mm. diametro, tubo brevi valde apophysato basi truncato, limbo erecto quam tubo paulo longiore carnoso, lobis 5 deltoideis obtusis circiter 1 mm. longis conspicue

calloso-incrassatis, basi discretis, sinibus subcomplanatis; corolla juvenili glabra, staminibus non visis; stylo post anthesin filiformi 12–14 mm. longo, stigmatibus subpeltato; fructibus irregularibus apophysatis ad 7 mm. diametro, lobis calycis persistentibus inflexis, seminibus oblongo-obovoideis 0.6–0.8 mm. longis conspicue reticulatis.

COLOMBIA: El Valle: Costa del Pacífico, Río Cajambre: Barco, 5–80 m. alt., *Cuatrecasas 17063* (GH, TYPE), 21–30 abril 1944; Río Yurumanguí: Entre Isla de Golondro y La Amargura, 10–40 m. alt., *Cuatrecasas 16048* (GH) (frútex epifito; pedúnculo y brácteas violáceos; cáliz blanquecino liláceo; corola pálido-violácea, cérea; hoja rígida, coriácea, verde claro).

This new species is a relative of *C. amalfiensis* Mansf. and *C. Purdiei* A. C. Sm., differing from both in its more distinctly apophysate calyx-tube and the proportionately larger callose-thickened portion of its calyx-lobes. From *C. amalfiensis* it also differs in its shorter and proportionately broader leaf-blades, with the upper secondaries more definitely parallel and ascending, in the presence of apical pedicellary glands, and in its shorter corolla (judging from the length of the style in our material). From *C. Purdiei* the new species differs obviously in its larger leaf-blades with a very different type of venation, in its longer inflorescence with more numerous flowers, and in its longer pedicels.

Cavendishia adenophora Mansf. in Notizbl. Bot. Gart. Berlin 9: 439. 1925; A. C. Sm. in Contr. U. S. Nat. Herb. 28: 473. 1932.

COLOMBIA: El Valle: Río Digua Valley, in dense forest along Río Engaña, alt. about 675 m., *Killip 34759* (A, NY, US) (native name: *queremé*); Cordillera Occidental, vertiente occidental: Hoya del Río Digua, lado izquierdo, Piedra de Moler, bosques, 900–1180 m. alt., *Cuatrecasas 15096* (GH); Hoya del Río Sanquiní, lado izquierdo, La Laguna, bosques, 1250–1400 m. alt., *Cuatrecasas 15394* (GH).

The cited specimens are listed because in 1932 I mentioned 1500 m. as the lowest altitude for the species, which is conspicuous for its brilliant red glandular-margined floriferous bracts. These recently collected specimens from lower elevations are slightly more robust throughout than my earlier description indicates; the leaf-blades are up to 17×8.5 cm., the rachis up to 3 cm. long, the basal and floriferous bracts as much as 7 cm. long (the glands of the latter sometimes with stalks 1.5 mm. long), the pedicels up to 17 mm. long (and both glandular and puberulent rather than glabrous as previously stated), the calyx-lobes up to 3 mm. long, and the corollas sometimes 25 mm. long. In spite of these differences from material known from higher elevations in Antioquia and Caldas, I believe that the specimens from El Valle represent merely a more vigorous phase of the species.

It should be noted that these are probably the first collections from El Valle to be accurately referred to *C. adenophora*. In 1932 I placed here two collections from La Cumbre, which Sleumer (in Notizbl. Bot. Gart. Berlin 12: 120. 1934) later — and I think correctly — placed with his *C. nitens*, a species with a caudate-acuminate leaf-apex.

Cavendishia coccinea A. C. Sm. in Bull. Torrey Bot. Club 60: 115. 1933.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental; Hoya del Río Anchicayá, lado derecho, bosques entre Pavas y Miramar, 350–450 m. alt., *Cuatrecasas*

14405 (GH) (frútex epífito; ramas finas, resistentes, tortuosas; hoja coriácea verde pálido; bráctees foliáceas carmin con dientes puntiformes verdes, resinoso-viscosas; cáliz rosado-cárdeno con dientes verdosos; corola blanco-lilácea, pálida, viscosa).

This beautiful small-leaved species has previously been known only from the type-collection (*Triana 2698*, "Acostadero, Cordillera del Chocó, alt. 2500 m.") and possibly from a sterile specimen (*Jervise*) from Antioquia. Its occurrence at low elevation in El Valle suggests the possibility that Triana's altitudinal record was inaccurate.

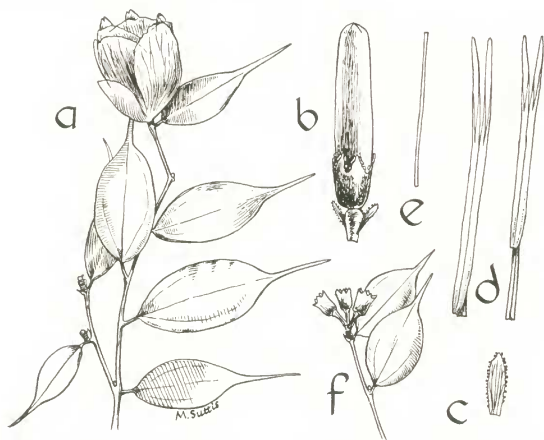


FIG. 3. *Cavendishia urophylla*: a. flowering branchlet, $\times \frac{3}{2}$; b. flower, $\times 1$; c. flower-subtending bract, $\times 1$; d. stamens, $\times 2$; e. style, $\times 1$; f. an inflorescence soon after anthesis, $\times \frac{3}{2}$; figs. a-e drawn from the type, fig. f from *Cuatrecasas 16164*.

Cavendishia urophylla sp. nov. FIG. 3.

Frutex epiphyticus ubique glaber, ramulis gracilibus subteretibus cinereis; petiolis rugulosis subteretibus vel canaliculatis 4-6 mm. longis; laminis coriaceis in sicco fusco-olivaceis elliptico-ovatis, (4-) 5-8 cm. longis, 1.7-2.7 cm. latis, basi obtusis, in apicem pergracilem acutum 15-30 mm. longum conspicue et abrupte caudato-acuminatis, margine leviter recurvatis, utrinque subnitidis, subtus inconspicue punctatis, e basi 5-nerviis, costa supra leviter impressa subtus elevata, nervis intimis costa similibus inconspicuioribus, nervis extimis immersis haud visis, venulis immersis; inflorescentia terminali vel axillari breviter racemosa ut videtur 2-4-flora bracteis pluribus imbricatis membranaceis involuta, bracteis elliptico-obovatis apice rotundatis integris eglandulosis, maximis (intimis) ad 4 cm. longis et 2-3 cm. latis, rhachi crassa (3-4 mm. diametro) irregu-

lari 3–6 mm. longa inferne cicatricosa; bracteis floriferis submembranaceis vel papyraceis elliptico- vel obovato-oblongis, 8–15 mm. longis, 3–5 mm. latis, obtusis, obscure nervatis, glandulis sessilibus vel breviter stipitatis transverse ellipsoideis copiose marginatis; pedicellis subteretibus sub anthesi 5–7 mm. longis crassis infra articulationem ad 2.5–3 mm. incrassatis, basim versus decidue bibracteolatis, bracteolis bracteis floriferis similibus sed lanceolatis circiter $6-7 \times 1$ mm.; calyce oblongo-campanulato sub anthesi 8–12 mm. longo et apice 7–8 mm. diametro, tubo leviter ruguloso basi truncato-rotundato, limbo suberecto quam tubo multo longiore, lobis 5 deltoideo-oblongis 2–3 mm. longis latisque subacutis, glandulis subapicalibus elongatis sessilibus etiam glandulis basalibus subglobosis conspicue marginatis, sinibus rotundatis; corolla in sicco submembranacea cylindrica sub anthesi circiter 30 mm. longa et 7 mm. diametro, lobis 5 oblongo-delloideis subacutis circiter 2.5 mm. longis latisque; staminibus subaequalibus corollam fere aequantibus liberis, filamentis membranaceis ligulatis alternatim 2–3 mm. et 9–11 mm. longis, antheris alternatim circiter 27 mm. et 21 mm. longis submembranaceis, thecis alternatim circiter 16 mm. et 11 mm. longis, tubulis quam thecis paullo brevioribus per rimas elongatas dehiscentibus; stylo gracili tereti corollam fere aequante, stigmata truncato.

COLOMBIA: El Valle: Agua Clara, along highway from Buenaventura to Cali, alt. about 100 m., in dense forest, Killip & Cuatrecasas 38893 (A, TYPE, US), June 6, 1944 (epiphytic shrub; bracts light pink; calyx white; corolla white at base, bluish-tinged above); Costa del Pacifico: Estero del Encanto, entre los Ríos Yurumanguí y Cajambre, 0–5 m. alt., Cuatrecasas 16164 (GH) (arbusto epifito; hoja craso-coriácea, verde brillante en el haz, clara en el envés; pedúnculo rojizo en la base; cáliz blanco verdoso; corola blanca, con el margen de los dientes pardusco); Río Yurumanguí, Veneral, bosques, 5–50 m. alt., Cuatrecasas 15844 (GH) (frútex epifito; hoja coriácea, verde claro); Río Naya, Puerto Merizalde, bosques, 5–20 m. alt., Cuatrecasas 14047 (GH) (frútex epifito; hoja y ramas verde tierno).

From its only close ally, *C. coccinea* A. C. Sm., which it resembles in its small caudate-acuminate leaves, the new species differs in obvious inflorescence characters. Its rachis is very short (scarcely 5 mm. long) and few-flowered rather than 4–9 cm. long and many-flowered, its outer sterile bracts are large and conspicuous, its flower-subtending bracts are much smaller and differently shaped, and its anther-tubules are proportionately shorter.

Cavendishia venosa A. C. Sm. in Contr. U. S. Nat. Herb. 28: 474. 1932.

COLOMBIA: El Valle: Costa del Pacifico, Río Cajambre: Barco, 5–80 m. alt., Cuatrecasas 17042 (GH) (frútex grande epifito; hoja coriácea, rígida, verde claro; bráctees inf. rosado-cárdenas, sup. blancas; cáliz blanco; corola blanca, extremo esmeralda).

Another collection of this distinct and beautiful species is very welcome, particularly as it is accompanied by better data than any of the four collections upon which I based the species. Of these, three were collected by André, including the type, which was without notes. The two remaining André collections came from Altaquer and Armada, both in the valley of the Río Cuaiquer in southern Nariño at altitudes of about 1000 meters (see André, *L'Amérique Equinoxiale*, pp. 364–366, map on p. 354. 1883). In 1932 I erroneously listed Armada as in Ecuador. The



FIG. 4. *Cavendishia chlamydantha*: a. flowering branchlet, $\times \frac{1}{2}$; b. pedicel and calyx, $\times 1$; c. gland from calyx-limb, $\times 50$; d. pedicellary bracteole, $\times 2$; e. cross-section of ovary, $\times 4$; f. corolla, $\times 1$; g. style, $\times 1$; h, i. stamens, introrse and extorse views, $\times 2$.

Sodirol locality which I cited in 1932, Río Pilatón, is in Pichincha, Ecuador, being one of the headwaters of the Río Esmeraldas.

The Cuatrecasas collection differs from those previously described in having its leaf-blades slightly shorter and broader in proportion, in having its pedicels and calyx-tube softly pale-pilose rather than glabrous (probably younger than those previously seen), and in having its corolla up to 32 mm. long. I believe that these features are of no more than individual significance. The stamens (incomplete in earlier collections) are completely glabrous, about 10 mm. long, with slender filaments alternately about 1.5 mm. and 4 mm. long, and with anthers alternately about 9 mm. and 7 mm. long, the tubules being much longer than the thecae.

Cavendishia chlamydantha sp. nov. FIG. 4.

Frutex epiphyticus, ramulis gracilibus (apicem versus 2.5–4 mm. diametro) subteretibus stramineis pilis ad 2 mm. longis copiose hispidis demum glabrescentibus; petiolis validis (circiter 2 mm. diametro) rugulosis nigrescentibus subteretibus 5–7 mm. longis ut ramulis stramineo-hispidis; laminis in sicco subcoriaceis pallide olivaceis oblongo-ellipticis, 9–17 cm. longis, 3.5–7 cm. latis, basi rotundatis vel late obtusis, in apicem caudatum ad 2 cm. longum subacutum abrupte angustatis, margine integris et anguste recurvatis vel subrevolutis, utrinque pilis inconspicuis circiter 1 mm. longis hispidulis demum subglabris, 5- vel 7-nerviis, costa supra prominula subtus prominente, nervis 4 principalibus e basi adscendentibus (vel intimis paulo suprabasalibus) curvatis supra prominulis subtus leviter elevatis, nervis extimis submarginalibus inconspicuis, rete venularum laxo intricato utrinque subprominulo; inflorescentia terminali (vel subterminali?) multiflora racemosa ellipsoidea bracteis inclusis ad 12 cm. longa et 8 cm. lata, basi bracteis imbricatis papyraceis oblongis ad 15 mm. longis (extimis minoribus) circumdata, pedunculo subnullo, rhachi crassa (3–4 mm. diametro) ut videtur ad 7 cm. longa basi bractearum incrassata, bracteis inferioribus sterilibus oblongo-obovatis ad 3×2.5 cm. apice rotundatis saepe fissis extus ut calyce glandulosus intus glabris, nervis conspicue anastomosantibus, bracteis superioribus floriferis similibus sed angustioribus ad 4×1.5 cm.; pedicellis subteretibus rugulosis sub anthesi 5–6 mm. longis, infra articulationem ad 2 mm. diametro incrassatis, medium versus bibracteolatis, bracteolis suboppositis membranaceis lanceolato-obovoideis, 8–10 mm. longis, circiter 3 mm. latis, basi angustatis, apice rotundatis vel submarginatis, paucinerviis, margine obscure ciliolatis, extus ut calyce glandulosus, cito caducis; calyce amplo cum pedicello conspicue articulo, tubo levi oblongo-cupuliformi sub anthesi 3–4 mm. longo et circiter 4 mm. diametro, basi truncato-rotundatis, disco annulari-pulvinato inconspicuo glabro, limbo membranaceo infundibulari corollam fere aequante 28–32 mm. longo, apice circiter 15 mm. diametro, copiose longitudinaliter venoso (nervis superne ramosis non anastomosantibus), extus glandulis stipitatis circiter 0.15 mm. longis copiose oblecto, intus glabro, profunde 5-lobato, lobis obovoideo-oblongis, 12–14 mm. longis et circiter 8 mm. latis, laxo imbricatis, apice emarginatis (et obscure callososo-apiculatis), margine pilis pallidis circiter 1 mm. longis copiose setuloso-ciliatis, sinibus acutis; corolla cylindrica praeter apicem limbo calycis oblecta, in sicco membranacea in vivo ut videtur tenuiter carnosa, sub anthesi circiter 37 mm. longa et

medium versus 7–8 mm. diametro, apice ad 4 mm. diametro angustata, ubique glabra, 5-lobata, lobis oblongo-deltaoideis obtusis circiter 1×2 mm.; staminibus 10 quam corolla multo brevioribus ubique glabris alternatim circiter 15 mm. et 15.5 mm. longis, filamentis liberis membranaceis stramineis ligulatis alternatim circiter 2 mm. et 5 mm. longis, basi circiter 1.3 mm. latis superne angustatis, antheris alternatim circiter 13.5 mm. et 11.5 mm. longis, thecis leviter granulosis 3–3.5 mm. longis basi rotundatis, tubulis quam thecis subtriplo longioribus apice obtusis per foramina ovals 0.7–1.3 mm. longos dehiscentibus; stylo corollam subaequante tereti circiter 0.6 mm. diametro, stigmate truncato et obscure papilloso.

COLOMBIA: El Valle: Costa del Pacífico, Río Cajambre: Barco, 5–80 m. alt., *Cuatrecasas 17004* (GH, TYPE), 21–30 abril 1944 (frútex epífito; hoja coriácea, verde claro; bráctees inferiores rosadas, las superiores blanco-pálido-verdosas; corola blanca, con el extremo esmeralda; cáliz blanco verdoso).

The entity described above is so unlike the known species of *Cavendishia* in its large membranaceous infundibular calyx-limb, with imbricate lobes enveloping the corolla except at the tip, that it is referred to the genus with hesitation. In the other described species of the genus the calyx-limb, although often exceeding the calyx-tube to a certain extent and occasionally with imbricate lobes, never approaches the corolla in length and is never of such delicate and filmy texture. Furthermore, the stamens of the new species are proportionately very short, less than half as long as the corolla, and the tubules are about three times as long as the thecae and dehisce by short oval introrse pores. As a rule *Cavendishia* has stamens nearly as long as the corolla, with tubules rarely more than twice as long as the thecae and dehiscent by elongate clefts of indeterminate length.

It would seem desirable to base a new genus upon this remarkable species, were it not for the occurrence of certain characters in two other species which demonstrate a transition toward more typical *Cavendishiae*. One of the few species of *Cavendishia* which has comparatively short stamens (only about one-third as long as the corolla) is *C. venosa* A. C. Sm., discussed above as occurring also in the vicinity of Barco. This species also has the tubules unusually long for *Cavendishia*, about three times longer than the thecae; the dehiscence, however, is indeterminate and typically cavendishoid, while the calyx is normal for the genus. Curiously, *C. venosa* is perhaps the species of *Cavendishia* which most nearly suggests the new plant in texture of leaves and inflorescence-bracts; the alliance of *C. chlamydantha* is probably in this vicinity, although it is a remarkably distinct entity.

A second ally of *C. chlamydantha* is *C. micayensis*, described below, a species which provides further transitional features connecting *C. chlamydantha* and the more typical species of the genus.

Cavendishia micayensis sp. nov.

Frutex, ramulis rugulosis subteretibus gracilibus (superne 2–3 mm. diametro) pilis pallidis circiter 1 mm. longis disperse hispida cito glabrescentibus; petiolis 2–3.5 mm. diametro subteretibus rugulosis nigrescentibus (5–) 8–12 mm. longis ut ramulis hispida; laminis in sicco chartaceo-

subcoriaceis olivaceis anguste oblongo-ellipticis vel ellipticis, (6-) 12-25 cm. longis, (1.5-) 4-10 cm. latis, basi subacutis vel obtusis, in apicem peracutum ad 1-2.5 cm. longum gradatim caudato-acuminatis, margine anguste revolutis, supra glabris, subtus pilis circiter 1 mm. longis dense hispidulis demum glabratis, 5- vel 7-nerviis, costa nervisque intimis 1-4 cm. concurrentibus supra impressis (basi prominulis) subtus prominentibus, nervis extimis supra subplanis vel prominulis subtus leviter elevatis, rete venularum utrinque prominulo vel subimmerso; inflorescentia subterminali sessili bracteis inclusis 6-9 cm. longa et 3.5-6 cm. lata, basi bracteis imbricatis venosis oblongis ad 15 mm. longis (extimis minoribus) circumdata, rhachi crassa (3-7 mm. diametro) 3.5-7 cm. longa, floribus bracteisque numerosissimis confertis; bracteis inferioribus sterilibus superioribus floriferis papyraceis oblongo-obovatis, 15-27 mm. longis, 9-20 mm. latis, apice rotundatis saepe fissis, margine decidue ciliolatis, conspicue nervosis, extus minute glanduloso-farinoso cito glabratis, intus glabris; floribus in axillis bractearum subsessilibus, pedicellis minutis ebracteolatis; calyce sub anthesi 14-16 mm. longo, tubo oblongo-obconico sub anthesi 3-3.5 mm. longo et summo 2.5-3 mm. diametro, ad basim obtusum gradatim angustato, disco annulari-pulvinato inconspicuo glabro, limbo papyraceo vel submembranaceo infundibulari corollam fere aequante, 11-13.5 mm. (in fructu ad 15 mm.) longo et apice 4-6 mm. diametro, obscure venoso, extus glandulis stipitatis circiter 0.1 mm. longis sparse oblecto, intus glabro, lobis 5 deltoideo-lanceolatis, 3.5-5 mm. longis et 1.5-3 mm. latis, apice subacutis, margine sparse et decidue stipitato-glandulosus, sinibus acutis vel obtusis; corolla tenuiter carnosae subcylindrica, sub anthesi 12-14 mm. longa et basim versus 3.5-4 mm. diametro, faucibus angustata, ubique glabra, lobis 5 oblongo-deltoides obtusis 1-2 \times 1 mm.; staminibus 10 quam corolla paulo brevioribus alternatim 9-11 mm. et 10-12 mm. longis, filamentis liberis membranaceis ligulatis superne angustatis alternatim circiter 1 mm. et 3-4 mm. longis, longioribus margine medium versus pilosis, antheris alternatim 9-10 mm. et 8-9 mm. longis, thecis obscure granulosis 3-4 mm. longis basi obtusis, tubulis quam thecis $1\frac{1}{2}$ -2-plo longioribus per foramina ovales 1-1.5 mm. longos dehiscentibus; stylo tereti gracili corollam subaequante, stigmatibus leviter incrassato et truncato; fructibus rugulosis subgloboso-turbinatis ad 7 mm. diametro (immaturis?) bracteis oblectis calycis limbo persistente coronatis.

COLOMBIA: El Cauca: "La Gallera," Micay Valley, alt. 1400-2100 m., Killip 7691 (GH, TYPE, Acad. Nat. Sci. Phila., US), June 29 or 30, 1922 (shrub, in forest; bracts red or carmine; corolla white).

Killip 7691 includes two species; the sheet of this number in the herbarium of the New York Botanical Garden is the type of *C. marginata* A. C. Sm. (in Contr. U. S. Nat. Herb. 28: 499, 1932), while the sheets cited above represent an entirely different plant. Although I was aware of this fact in 1932, the flowering specimen at the Gray Herbarium was not then available to me; the National Herbarium and Philadelphia Academy sheets lack the corollas and stamens which make an adequate description feasible.

Cavendishia micayensis is very similar in foliage and general inflorescence characters to the preceding new species (*C. chlamydantha*), like which it has a calyx-limb of unusual shape and texture which nearly

equals the corolla in length. The present species differs from *C. chlamydantha* in its shorter inflorescence and smaller bracts, its much smaller and essentially sessile flowers with ebracteolate pedicels, its differently shaped calyx-tube, its obscurely veined calyx-limb with comparatively small non-imbricate lobes, its thicker corolla, and its differently proportioned stamens. In characters pertaining to its calyx, this new species is more or less intermediate between *C. chlamydantha* and typical *Cavendishiae*; in the proportions of its stamens and in their length, *C. micayensis* is quite typical of the genus, but in its anther-dehiscence it is suggestive of *C. chlamydantha*. In the three species of this general alliance, namely *C. venosa*, *C. micayensis*, and *C. chlamydantha*, one can observe a remarkable trend within the genus, culminating in *C. chlamydantha*.

Cavendishia palustris A. C. Sm. in Am. Jour. Bot. 27: 543, 1940.

COLOMBIA: El Valle: Río Calima (región del Chocó), La Esperanza, 5–10 m. alt., *Cuatrecasas 16757* (GH) (arbusto bejucoso, epifito; hoja coriácea, verde claro; ramillas inflorescencias y pedúnculos púrpúreos; cáliz verde blanquecino; corola blanco-lilácea o blanco-morada); El Forze, near Buenaventura, sea-level, *Killip & Cuatrecasas 38961* (A, US) (epiphytic shrub; corolla white, pink-tinged in upper half; in region inundated only at high tide).

The cited collections agree excellently with the type and only previously known specimen, collected in mangrove swamp in Buenaventura Bay.

Cavendishia micrantha sp. nov.

Frutex epiphyticus staminibus exceptis ubique glaber, ramulis gracilibus subteretibus stramineis vel cinereis; petiolis subteretibus rugulosis 8–17 mm. longis inferne incrassatis; laminis chartaceis in sicco fusco-viridibus oblongo-lanceolatis, (7–) 9–17 cm. longis, (1.3–) 2.5–5.5 cm. latis, ad basim attenuatam in petiolum decurrentem angustatis, apice caudato-acuminatis (acumine gracili acuto 1–2.5 cm. longo), margine integris et paulo recurvatis, 5 (vel obscure 7-) nerviis, costa nervisque 4 supra leviter insculptis vel obscure prominulis subtus plus minusve prominentibus, nervis intimis costa 5–25 mm. concurrentibus apicem fere attingentibus, nervis inferioribus e basi orientibus vel suprabasalibus inconspicuioribus, nervis extimis marginalibus obscuris, rete venularum conspicue intricato utrinque prominulo; inflorescentia axillari vel subterminali racemosa 12–25-flora (floribus saepe mox delapsis) 3–5 cm. longa, pedunculo subnullo, rhachi simplici obtuse angulata circiter 1 mm. diametro basi ut videtur decidue bracteata, floribus in foveolis insertis, bracteis floriferis papyraceis oblongo-deltoides subacutis 1–1.5 mm. longis; pedicellis teretibus sub anthesi 12–17 mm. longis, basi circiter 0.7 mm. diametro, superne ad 1–1.5 mm. diametro incrassatis, basim versus obscure 1- vel 2-bracteolatis, bracteolis papyraceis lanceolatis acutis circiter 1 mm. longis obscure glanduloso-marginatis; calyce cupuliformi vel oblongo-pyriformi sub anthesi circiter 4 mm. longo et apice 3–4 mm. diametro, tubo coriaceo basi rotundato, limbo suberecto papyraceo tubum subaequante, lobis 5 deltoideis acutis sub anthesi 1–1.4 mm. longis et ad 1.7 mm. latis, margine sinus acutos versus obscure glanduloso-incrassatis; corolla submembranacea breviter conico-subglobosa, sub anthesi circiter 3 mm. longa et 3.5 mm. diametro, apice ad 1–1.5 mm. diametro contracta, lobis 5 deltoideis acutis circiter 0.6×0.8 mm.; staminibus 10 subaequalibus 2–2.4 mm. longis, filamentis

submembranaceis ligulatis 0.6–1.3 mm. longis ciliolato-marginatis, antheris 1.5–2 mm. longis ubique ad apicem pallide hispidulis, tubulis thecas subaequantibus, rimis elongatis interdum in thecas extensis; stylo tereti corollam subaequante apice truncato; fructibus juvenilibus rugulosis subglaucis globosis ad 5 mm. diametro limbo calycis persistente coronatis.

COLOMBIA: El Valle: Agua Clara, along highway from Buenaventura to Cali, alt. about 100 m., in dense forest, Killip & Cuatrecasas 38923 (A, US); Costa del Pacífico, Río Cajamere: Barco, 5–80 m. alt., Cuatrecasas 17000 (GH, TYPE), 21–30 abril 1944 (frútex epifito; hoja coriácea, delgada, verde-grisácea; pedúnculos blanco-verdosos; cáliz blanco verdoso; corola blanca (cerrada); frutos inmaduros morado-claros).

This extraordinary species, with the smallest flowers known in *Cavendishia*, scarcely suggests the genus in its floral characters, but in habit it is reminiscent of those atypical *Cavendishiae* related to *C. spicata* A. C. Sm. From *C. chocoensis* A. C. Sm., apparently its closest ally, the new species differs not only in its even smaller flowers, but also in its more obviously hispidulous stamens, longer pedicels, much shorter and essentially epedunculate inflorescences, longer petioles, and attenuate-based leaf-blades. A curious relationship between *Cavendishia* and *Psammisia*, not suspected before abundant material from Pacific Colombia became available, is suggested by *C. micrantha* and *C. chocoensis* on the one hand and *Psammisia occidentalis* A. C. Sm. and its relatives on the other.

Cavendishia Quereme (H. B. K.) Benth. & Hook. f. Gen. Pl. 2: 570. 1876; A. C. Sm. in Contr. U. S. Nat. Herb. 28: 495. 1932.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Anchicayá, lado derecho, bosque bajando a La Planta, 400 m. alt., Cuatrecasas 14878 (GH) (frútex epifito; frutos blancos).

The cited specimen is listed because it provides a new low altitude record for this species, which I previously had seen only from elevations of 1000–1700 m.: it is fairly common in El Valle, the type being from the vicinity of Cali.

Satyria dolichantha sp. nov.

Frutex epiphyticus, ramulis apicem versus gracilibus (2–3 mm. diametro) teretibus obscure puberulis, vetustioribus cinereis glabris robustis; petiolis crassis subteretibus rugulosis 6–12 mm. longis juventute puberulis cito glabratis; laminis glabris subcoriaceis in sicco olivaceis oblongo-vel ovato-ellipticis, (8–) 12–17 cm. longis, (3.5–) 4–7 cm. latis, basi late obtusis vel rotundatis, apice in acuminem 5–12 mm. longum obtusum gradatim productis, margine integris et leviter recurvatis, 5(raro 7-)-nerviis, costa supra elevata subtus prominente, nervis 2 intimis cum costa ad 2 cm. concurrentibus vel paullo suprabasalibus ascendentibus apicem versus costa anastomosantibus utrinque elevatis, nervis inferioribus e basi divergentibus submarginalibus inconspicuioribus, rete venularum intricato supra leviter subtus evidenter prominulo; inflorescentia ubique (rhachi, bracteis bracteolisque, pedicellis, calycibus corollisque) minute sed uniformiter pallido-puberula, axillari elongata racemosa 7–12-flora, basi bracteis paucis imbricatis deltoideis obtusis 1–1.5 mm. longis circumdata, pedunculo (circiter 2 cm. longo) et rhachi 4.5–7 cm. longis gracilibus (1–1.5 mm. diametro) leviter angulatis, bracteis floriferis ut bracteis basalibus; pedicel-

lis subteretibus 8–18 mm. longis in vivo ut videtur carnosis, basi 1–1.5 mm. diametro superne ad 2–3 mm. incrassatis, supra basim (1–5 mm.) bracteolas 2 papyraceas ovato-deltaeideas acutas 1–1.5 mm. longas obscure ciliolatas gerentibus; calyce sub anthesi 3–5.5 mm. longo, tubo cupuliformi 2.5–3 mm. longo et diametro ruguloso interdum obscure luteo-glanduloso basi rotundato, limbo patente papyraceo intus glabro, lobis 5 ovato-deltaeideas apiculatis 0.7–1.5 mm. longis et 2–3 mm. latis, sinibus acutis; corolla in sicco submembranacea in vivo ut videtur carnosia intus glabra cylindrica sub anthesi 40–47 mm. longa, basim versus 4–6 mm. diametro, superne paulo angustata, lobis 5 lanceolato-oblongis obtusis 3–4 mm. longis; staminibus 10 glabris alternatim 10–13 mm. et 11.5–14.5 mm. longis, filamentorum tubo castaneo submembranaceo vel papyraceo 6–7 mm. longo, antheris rigidis alternatim 6.5–8 mm. et 8–9.5 mm. longis, tubulis quam thecis paulo longioribus apice acutis per rimas ovales circiter 2 mm. longas dehiscentibus; stylo tereti sub anthesi leviter protruso apice truncato; fructibus subglobosis rugulosis glabratis 7–9 mm. diametro limbo calycis persistente coronatis.

COLOMBIA: El Chocó: Banks of Quebrada Togoromá, in dense tidal forest, *Killip & Cuatrecasas 39108* (A, TYPE, US), June 13, 1944 (epiphytic shrub; corolla red in lower two-thirds, green in upper third, the tips of the lobes purplish; style greenish white); El Cauca: Costa del Pacífico, Río Micay, Brazo Noanamito, orilla derecha: El Chachajo, 2–5 m. alt., *Cuatrecasas 14249* (GH) (arbusto epifito; cáliz verde; corola carm.in con el extremo verde oscuro).

This striking and very distinct species is characterized by its long inflorescences and flowers (the corollas being the longest known for the genus) and its puberulent inflorescence-parts. Its closest relative is *S. panurensis* (Benth.) Benth. & Hook. f., of the Amazon basin and eastern Andean foothills, from which the above-mentioned characters, the more obvious calyx-lobes, and the longer stamens readily distinguish it.

Satyria grandifolia Hoer. in Bot. Jahrb. 42: 319. 1909; A. C. Sm. in Contr. U. S. Nat. Herb. 28: 526. 1932.

COLOMBIA: El Valle: Río Calima (región del Chocó), entre La Esperanza y Bellavista, 5–10 m. alt., *Cuatrecasas 16789* (GH) (gran frútex epifito; hoja coriácea, rígida, verde claro; cáliz rosado cárdeno; pedúnculo rojo cárdeno; corola rojo carmín, $\frac{3}{4}$ superior blanco); Cordillera Occidental, vertiente occidental: Hoya del Río Sanquini, lado izquierdo, La Laguna, bosques, 1250–1400 m. alt., *Cuatrecasas 15592* (GH) (frútex epifito; bayas caulinares blancas, maduras violáceas, 15–20 mm. diám., dulzainas).

Satyria grandifolia has otherwise been recorded only from the type collection of Triana. Although the two specimens cited above have considerable altitudinal range, they are referred here with reasonable confidence, agreeing with the type in foliage and all essential details. No. 15592 has the calyx somewhat more robust than indicated in previous descriptions, the tube being about 4.5 mm. in diameter at anthesis and the limb about 4 mm. long.

The type, *Triana 2694*, was obtained at "Cienegueta," Cordillera del Chocó. Although in 1932 I cited this locality as in El Chocó, it is possible that Triana used this name more broadly and that his locality was actually in El Valle or even El Cauca. The type at Berlin bore the inscription "Prov. del Cauca," and it was so cited by Hoerold. The Berlin sheet also bore the note "Alt. 2100." and Hoerold cited this as 2100 m. If this

is correct, the species would appear to have an unusual altitudinal range of essentially 2100 m., but it is possible that Triana's measurement was inaccurate or that the label was not actually written by him.

Satyria leptantha sp. nov.

Frutex epiphyticus ubique glaber, ramulis crassissimis (floriferis ad 1.5 cm. diametro) teretibus rugosis cinereis; petiolis subteretibus rugosis 1-2 cm. longis crassis (3-5 mm. diametro); laminis coriaceis siccitate olivaceis oblongo-lanceolatis, 23-40 cm. longis, 4-9.5 cm. latis, basi late obtusis et in petiolum leviter decurrentibus, superne angustatis (apice ipso non viso ut videtur acuto), margine integris et leviter recurvatis, 5-nerviis, costa nervisque 2 interioribus ascendentibus cum costa 2.5-6 cm. concurrentibus apicem fere attingentibus supra leviter impressis subtus valde prominentibus, nervis 2 inferioribus e basi divergentibus submarginalibus inconspicuioribus, venulis supra immersis subtus in reticulum laxum prominulum anastomosantibus; inflorescentiis e ramulis defoliatis in glomerulis aggregatis fasciculatim breviter racemosis 3-5-floris, bracteis basi rhachis et bracteis floriferis papyraceis deltoideis acutis 1-1.5 mm. longis obscure ciliolatis caducis, rhachi minuta 1-4 mm. longa; pedicellis gracilibus (basi circiter 0.5 mm. diametro, superne ad 2 mm. diametro gradatim incrassatis) teretibus rugulosis 19-24 mm. longis, supra basim (3-7 mm.) bracteolas 2 oblongas obtusas circiter 1.5 mm. longas gerentibus; calyce brevi sub anthesi 2-3 mm. longo, tubo ruguloso circiter 1.5 mm. longo et 3.5 mm. diametro basi truncato, limbo patente 1-1.5 mm. longo papyraceo, lobis 5 ovatis apiculatis circiter 1×2.5 mm. praeter partem apicalem incrassato-marginatis, sinibus obtusis; corolla tenuiter carnosa graciliter cylindrica sub anthesi 24-27 mm. longa, basim versus circiter 3 mm. diametro, superne paullo angustata, lobis 5 deltoideis subacutis circiter 0.7×1.5 mm.; staminibus 10 alternatim 7 mm. et 8 mm. longis, filamentorum tubo circiter 3 mm. longo, antheris rigidis alternatim circiter 5 mm. et 6 mm. longis, tubulis thecas subaequantibus per rimas apertas ovales circiter 1.5 mm. longas dehiscentibus; stylo gracili tereti sub anthesi corollam excedente apice paullo incrassato.

COLOMBIA: El Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Dégua, lado izquierdo, Piedra de Moler, bosques, 900-1180 m. alt., *Cuatrecasas 14963* (GH, TYPE), 19-28 agosto 1943 (frútex grande epífito; pedúnculos rojo-cárdenos; corola rojo-cárdena con el extremo blanco).

Satyria leptantha is closely related only to *S. grandifolia* Hoer., differing in its very long and proportionately narrower leaf-blades with the inner secondaries more highly concurrent, and in its very short and comparatively few-flowered inflorescences, longer pedicels, very slender corolla, and shorter anthers.

Satyria arborea A. C. Sm. in Jour. Arnold Arb. 24: 469. 1943.

COLOMBIA: Antioquia: Cerro del Tabor, Yarumal, *Daniel 3401* (US) (fr.); Páramo de Sonsón, alt. 2700-2850 m., *Daniel 3438* (US) (fl.).

The cited collections are the second and third known of the species, the type of which was obtained between Valdivia and Yarumal, in Antioquia. The fruiting specimen has the petioles often negligible (1-4 mm. long), the leaf-blades (5-) 7-9 cm. long and 2.5-3.5 cm. broad, the pedicels up to 28 mm. long, and the fruits strongly rugulose (apparently very fleshy

when fresh), depressed-subglobose, 5–8 mm. in diameter, flattened at apex, and surmounted by the inconspicuous calyx-limb.

Satyria bracteolosa sp. nov.

Frutex epiphyticus ubique inflorescentia excepta glaber, ramulis apicem versus gracilibus (2–4 mm. diametro) brunneis obtuse angulatis, vetustioribus validis subteretibus cinereis; petiolis 1–2 mm. diametro 5–10 mm. longis rugulosis inconspicue angulatis; laminis coriaceis in sicco olivaceis oblongo-ellipticis, 8–22 cm. longis, 3–7 cm. latis, basi obtusis et in petiolum decurrentibus, apice in acuminem 5–15 mm. longum obtusum vel subacutum cuspidatis, margine integris et leviter recurvatis, 5 (vel 7-)nerviis, costa supra valde elevata subtus prominente, nervis intimis cum costa 1–3.5 cm. concurrentibus, extimis e basi orientibus vel paullo suprabasalibus, nervis omnibus adscendentibus supra prominulis subtus elevatis, rete venularum intricato utrinque subprominulo vel supra immerso; inflorescentiis e ramulis defoliatis ortis glomerulatis vel inconspicue breviter racemosis 4–7-floris basi bracteis pluribus circumdatis, ubique (bracteis bracteolisque, pedicellis, calycibus corollisque) obscure pallido-puberulis, bracteis basalibus imbricatis papyraceis oblongo-deltaeideis obtusis 2–3 mm. longis et latis ciliolato-marginatis, rhachi brevissima; pedicellis teretibus crassis (1.5–2 mm. diametro) 5–8 mm. longis apice incrassatis et cum calyce articulatis, apicem versus conspicue bibracteolatis, bracteolis papyraceis late ovatis vel reniformibus, 2–3 mm. longis, 4–5 mm. latis, intus glabris, margine ciliolatis, margine basali imbricatis, apice rotundatis, liberis sed pseudocupulam basim calycis tubi amplectentem formantibus; calyce cupuliformi sub anthesi circiter 4 mm. longo, tubo brevi disco lato pulvinato coronato, limbo papyraceo intus glabro erecto-patente circiter 2 mm. longo, lobis 5 oblongo-deltaeideis obtusis circiter 1.5×3 mm. interdum subconnatis, sinibus acutis; corolla carnosa intus glabra cylindrico-urceolata, sub anthesi 14–19 mm. longa, basim versus 3–5 mm. diametro, superne gradatim angustata, lobis 5 oblongis subacutis circiter $2-3 \times 1.5$ mm.; staminibus 10 alternatim 5–6 mm. et 7–8 mm. longis, filamentorum tubo papyraceo glabro 2–2.5 mm. longo, antheris rigidis alternatim 4–4.5 mm. et circiter 6 mm. longis, thecis basi subacutis et leviter productis, tubulis thecas subaequantibus per rimas ovas circiter 2 mm. longas dehiscens; stylo tereti apice truncato quam corolla conspicue longiore.

COLOMBIA: El Chocó: Río San Juan, cercanías de Palestina, 5–50 m. alt., *Cuatrecasas 16894* (GH, TYPE), 12–14 mar. 1944 (frutex epifito; hoja coriácea, rígida, verde claro; cáliz id.; corola roja, $\frac{1}{2}$ superior amarillo); El Valle: Río Calima (región del Chocó), La Trojita, 5–50 m. alt., *Cuatrecasas 16604* (GH) (frutex epifito; hoja coriácea, rígida, verde medio; cáliz verde claro; corola roja, $\frac{1}{2}$ superior rojo amarillento, dientes verdosos); Costa del Pacífico, Río Cajambre: Quebrada del Corosal, 0–5 m. alt., *Cuatrecasas 17732* (GH) (arbusto epifito; hoja coriácea, rígida; cáliz verde; corola con el extremo blanco).

This remarkable species differs from all others of the genus in its subapical pedicellary bracteoles, which form a pseudocupule clasping the base of the calyx-tube. Another distinguishing feature is the very short puberulent inflorescence; there is a striking contrast between the long and short anthers, the latter being comparatively inconspicuous and appearing dorsal to the larger ones.